This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

https://books.google.com

Google

990
907

Library of
Princeton University

Dei Sub Numine Viget

The
Mrs. J. O. H. Pitney
Collection of
International Law
and
Diplomacy

07
391-409',

INSTITUTION OF ENGINEERS IN SCOTLAND.

WITHDRAWN I.E.S. FROM LIBRARY

167

THE

NAVAL ANNUAL.

1907.

EDITED BY

T. A. BRASSEY, [illegible]

[illegible]

[illegible]

PART I.—Lord BRASSEY, G.C.B., [illegible]
Honour; P. A. HISLAM; JOHN LEYLAND; Commander
CHAS. N. ROBINSON, R.N.; JAMES R. THURSFIELD;
and the EDITOR.

PART II.—List of Ships: Commander CHAS. N. ROBINSON, R.N.,
and JOHN LEYLAND.
Ordnance Tables.

PART III.—FIRST LORD'S MEMORANDUM; BRITISH AND FOREIGN
ESTIMATES, PRESIDENT ROOSEVELT'S MESSAGE, &c.

1907.

PORTSMOUTH

J. GRIFFIN AND CO., 2, THE HARD.
(BOOKSELLERS TO [illegible])

London Agents: SIMPKIN, MARSHALL & CO.

Foreign Agents:
PARIS: BOYVEAU & CHEVILLET, 22, RUE DE LA BANQUE.
NEW YORK: D. VAN NOSTRAND COMPANY. BERLIN: W. H. KÜHL.
HONG KONG, SHANGHAI, AND YOKOHAMA: KELLY & WALSH & CO.
TOKYO & OSAKA: MARUZEN KABUSHIKI-KAISHA.
BUENOS AYRES: MITCHELL'S BOOK STORES.

THE

NAVAL ANNUAL,

1907.

EDITED BY

T. A. BRASSEY, A.I.N.A.,

Honorary Fellow of Balliol; Commander of the Order of the Crown of Italy.

> "And ye take mine honour from me if ye take away the sea."—*Rudyard Kipling.*

PART I.—Lord BRASSEY, G.C.B., Commander of the Legion of Honour; P. A. HISLAM; JOHN LEYLAND; Commander CHAS. N. ROBINSON, R.N.; JAMES R. THURSFIELD; and the EDITOR.

PART II.—List of Ships: Commander CHAS. N. ROBINSON, R.N., and JOHN LEYLAND.
Ordnance Tables.

PART III.—FIRST LORD'S MEMORANDUM; BRITISH AND FOREIGN ESTIMATES; PRESIDENT ROOSEVELT'S MESSAGE, &c.

1907.

PORTSMOUTH:
J. GRIFFIN AND CO., 2, THE HARD.
(BOOKSELLERS TO HER LATE MAJESTY QUEEN VICTORIA.)

London Agents: SIMPKIN, MARSHALL & CO.

Foreign Agents:
PARIS: BOYVEAU & CHEVILLET, 22, RUE DE LA BANQUE.
NEW YORK: D. VAN NOSTRAND COMPANY. BERLIN: W. H. KUHL.
HONG KONG, SHANGHAI, AND YOKOHAMA: KELLY, WALSH & CO.
TOKYO & OSAKA: MARUZEN-KABUSHIKI-KAISHA.
BUENOS AYRES: MITCHELL'S BOOK STORES.

9910
.207 1907

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
DUKE STREET, STAMFORD STREET, S.E., AND GREAT WINDMILL STREET, W.

INSTITUTION
ENGINEERS
IN
SCOTLAND.

4359.

PREFACE.

THE present volume is somewhat smaller than its predecessors, and this has enabled the price to be reduced.

The year under review has been chiefly remarkable for the vigorous and sometimes violent attacks made upon the recent administration of the Navy, culminating with the demand for the appointment of a Committee of the Lords and Commons to inquire into the whole subject. If public confidence in our Naval Administration has been shaken, the main reason is the, in many cases, extravagant claims put forward on behalf of reforms recently introduced—of which none was more extravagant than the assertion that the scrapping of obsolete vessels was responsible for the reduction of Navy Estimates. A cursory glance at the Estimates for 1907–8, and of those for the two preceding years, will show that the reduced expenditure on new construction has been mainly responsible for the economies which have been effected. Extravagant claims have the reverse effect to that intended. They weaken rather than strengthen public confidence.

The reforms introduced under the present Board have been many and far-reaching. Upon a comprehensive survey it is shown in the following pages, as in the *Naval Annual* of last year, that the Navy has never in recent times been in a better state of preparation for war. There is none the less anxiety in the opinion of competent authorities as to the wisdom of some changes, and as to whether others have not been carried too far. In dealing with a great service, revision and reconsideration are always needed. Some decisions must be open to criticism. It is universally admitted, for instance, that the Naval officer of to-day requires more training in engineering than his predecessors; but many consider that an excessive proportion of their time is devoted, by Naval Cadets at Osborne and Dartmouth, to the practical and theoretical study of this subject. Again, a large number of ships quite useless for purposes of war were maintained in commission on foreign stations; many obsolete ships of various classes, from battleship to gunboat, involving a large expenditure in the aggregate for maintenance and repair, occupied the home dockyards. Recent action in these respects has been generally commended as right in principle, but many question whether it has not been carried to excess, and whether ships are not being "scrapped," and sold for insignificant sums, which would have a certain value in time of war. Of all the reforms recently introduced, that which is probably viewed with most apprehension is the institution of short service in the Navy.

The spirit of economy is in the air. The present Government was returned to power largely to put a check to the growth of naval and military expenditure. Against extravagance in naval expenditure we have for several years protested in these pages. We have repeatedly pointed out that if the growth of the permanent force and if the expenditure on naval works were allowed to go on unchecked, a reaction was bound to ensue, and that when the demand for economy came, the reduction would be made, in the future as in the past, in the Shipbuilding Vote. For reasons given in the following pages a temporary reduction in the Shipbuilding Vote has been permissible without injury to our naval position. At the end of Part III. is reprinted from *The Speaker* a review of the *Naval Annual* of 1903 by an old Admiralty official, Mr. G. Shaw-Lefevre, which is worthy of the attention of the supporters of the present Government who desire economy in naval expenditure. Some economy without loss of efficiency has resulted from the reforms recently introduced. Still larger economies are possible on the lines briefly summarised in the review.

Mr. Leyland has been prevented this year by the pressure of other duties from co-operating in the work of editor. He has, however, kindly assisted in passing for press a portion of this volume.

We have to thank the Admiralty for kindly supplying drawings of recent ships.

T. A. BRASSEY.

CONTENTS.

PART I.

PAGE

CHAPTER I.

The British Navy .. .. *T. A. Brassey* 1
Note.—The Colonies and Imperial Defence 15

CHAPTER II.

Foreign Navies .. .. *T. A. Brassey and John Leyland* 17

CHAPTER III.

Comparative Strength .. .. *T. A. Brassey* 39
Comparative Tables 50

CHAPTER IV.

British Shipbuilding Programmes 57

CHAPTER V.

British Naval Manœuvres in 1906 .. .. *J. R. Thursfield* 76

CHAPTER VI.

The French and Italian Manœuvres .. .. *John Leyland* 102

CHAPTER VII.

The Strategical Features of the North Sea .. .. *P. A. Hislam* 112

CHAPTER VIII.

In Gibraltar Bay—Notes on Naval Policy .. .. *Lord Brassey* 127

CHAPTER IX.

The Reorganization of the Navy 142

CHAPTER X.

The Laws of the Navy .. .. *Chas. N. Robinson* 154

CHAPTER XI.

The "Blue Water School"—Principles of Defence *John Leyland* 175

PART II.

LIST OF BRITISH AND FOREIGN SHIPS.

Commander C. N. ROBINSON, R.N., and JOHN LEYLAND.

PLANS OF BRITISH AND FOREIGN SHIPS.

S. W. BARNABY, M.I.N.A.

ORDNANCE TABLES.

PART III.

PAGE

FIRST LORD'S EXPLANATORY STATEMENT 311

BRITISH NAVY ESTIMATES 348

PROGRAMME OF SHIPBUILDING 358

NAVAL WORKS 362

RETURNS OF GUNNERY AND GUNNERY PRACTICE 369

AUSTRO-HUNGARIAN NAVY ESTIMATES 375

FRENCH NAVY ESTIMATES 376

GERMAN NAVY ESTIMATES 380

ITALIAN NAVY ESTIMATES 382

RUSSIAN NAVY ESTIMATES 384

UNITED STATES NAVY ESTIMATES 385

COMPARATIVE NAVAL EXPENDITURE 386

UNITED STATES BATTLESHIPS—PRESIDENT ROOSEVELT'S LETTER .. 387

THE TACTICAL QUALITIES OF THE DREADNOUGHT TYPE OF BATTLESHIP—COMMANDER SIMS 391

THE RIGHT HON. G. SHAW-LEFEVRE'S REVIEW OF THE *NAVAL ANNUAL* OF 1903 410

LIST OF ILLUSTRATIONS.

H.M.S. Dreadnought . . . . *Frontispiece*

République (French battleship) . . . . *facing page* 21

Rhode Island (United States battleship) . . . . . „ „ 33

Pennsylvania (United States armoured cruiser) . . . . „ „ 45

Deutschland (German battleship) . . . . „ „ 112

DIAGRAM.

Showing the Expenditure upon the Construction of New Ships during the 33 Years between 1875-76 and 1907-8 *facing page* 360

PART I

CHAPTER I.

THE BRITISH NAVY.

Progress of New Construction.

DURING the year under review there have been completed four battleships, viz: the Africa, Britannia and Hibernia of the Edward VII. class (programme 1903–4), and the Dreadnought (programme 1905–6); and four armoured cruisers, the Achilles, Cochrane, Natal and Warrior (programme 1903–4). The last-named, though not completed by the end of the financial year, will probably be ready for sea by the time this book is published. Two battleships, the Agamemnon and Lord Nelson, and two armoured cruisers, the Minotaur and Shannon, have been launched. The Defence, of the Minotaur class, and three armoured cruisers (or battleships) of the Invincible class* are under construction.

Three battleships of the Dreadnought class have been laid down—the Bellerophon at Portsmouth, the Temeraire at Devonport, and the Superb at Elswick.

Criticism of Programme—and the reply.

The decision of the Admiralty to commence only three battleships, which was announced in Parliament in July, was much criticised both in Parliament and by the Press. The Admiralty have laid it down that the main object is to secure the fighting efficiency of the Fleet and its instant readiness for war; and the money asked for the Navy shall be the least possible compatible with those vital necessities In the Memorandum issued by Lord Cawdor before leaving office at the end of 1905 the following passage occurs:—"At the present time strategic requirements necessitate the building of four armoured ships only, and unless unforeseen contingencies arise, this number will not be exceeded. The period of building is to be two years, therefore four ships will be laid down each year, and there will be eight ships in course of construction in one year, either in the dockyards or by contract." The main point of criticism was the fact that the Admiralty in July considered it sufficient to lay down three battleships, whereas, six months before they had announced that it was necessary to lay down four armoured vessels annually. The reply to this criticism is adequate. Whereas, at the beginning of the year 1906 it was probable that France, Germany and the United States would put in hand programmes of new construction, as a matter of fact no new battleships were laid down before the Admiralty decision was announced. Foreign Powers determined to wait till the design of the Dreadnought was known before laying down new ships. As the shipbuilding programme of the British Navy should obviously be regulated by that of its possible enemies, and as, moreover, we can still build more rapidly than foreign countries, the present Board of Admiralty were justified in reducing their shipbuilding programme in the year under review, and their action is probably more justifiable than that of their predecessors in reducing their programme.

---

* One of these, the Indomitable, was launched on March 16, 1907, from the yard of the Fairfield Company, Glasgow.

Battleships completed.

All the battleships of the King Edward VII. class are now in commission. The following particulars of the trials of the Africa, Britannia and Hibernia are taken from *Engineering*:—

Name.	Makers of Machinery.	At one-fifth Power.			At four-fifths Power.			Full Power.		
		Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.	Speed.†	I.H.P.	Coal.
		knots.		lbs.	knots.		lbs.	knots.		lbs.
Africa.	John Brown & Co.	11·8	3,682	2·0	17·54*	12,860	1·79	18·95*	18,698	1·87
Britannia.	Messrs Humphrys	11·44	3,539	2·0	16·79	13,087	1·5	18·74	18,725	1·83
Hibernia.	Harland & Wolff	10·4	3,710	2·0	15·5	12,700	1·59	18·127*	18,112	1·92

* Measured Mile.

Dreadnought.

The completion of the Dreadnought is the chief event of the naval year, and has aroused general interest. She is the first modern ship in which the medium armament has been entirely discarded, and which carries no less than ten 12-in. guns, while the speed is superior to that of any battleship yet completed. The Dreadnought also marks a record in rapidity of construction. She was sufficiently completed to go through her trials in one year from the date when she was officially laid down. The actual period during which she was under construction may be taken at rather less than 16 months —a very fine performance, reflecting great credit on the staff of Portsmouth Dockyard, and on the makers of her machinery, guns and armour.

Official description.

The principal features of the Dreadnought's design were described in a Parliamentary Paper (Cd. 3048) entitled a "Memorandum Explanatory of the Programme of New Construction for 1905-6."

Ten 12-in. guns and twenty-seven 12-pounder quick-firing anti-torpedo boat guns and five submerged torpedo tubes.

In arranging for a uniform armament of 12-in. guns it became at once apparent that a limitation to the number of guns that could be usefully carried was imposed by considerations of the blast effect of the guns on the crews of those guns adjacent to them. It is obviously uneconomical to place the guns in such relative positions that the blast of any single gun on any permissible training should very seriously hamper the use of one or more of the remaining guns.

While it is recognised that broadside fire is held to be the most important in a battleship, all-round fire is also considered of great importance, since it lies in the power of an enemy to force an opponent, who is anxious to engage, to fight an end-on action.

In the arrangement of armament adopted, six of the guns are mounted in pairs on the centre line of the ship; the remaining four guns are mounted in pairs on the broadside. Thus eight 12-in. guns—80 per cent. of the main armament—can be fired on either broadside, and four, or possibly six, 12-in. guns—or 60 per cent. of the main armament—can be fired simultaneously ahead or astern.

In view of the potentialities of modern torpedo craft, and considering especially the chances of torpedo attack towards the end of an action, it is considered necessary to separate the anti-torpedo boat guns as widely as possible from one another, so that the whole of them shall not be disabled by one or two heavy shells. This consideration led the Committee to recommend a numerous and widely distributed armament of 12-pounder quick-firing guns of a new design and greater power than those hitherto carried for use against torpedo craft.

In order to give the ship good sea-going qualities and to increase the command of the forward guns, a forecastle is provided, giving the ship a freeboard forward of 28 ft.—a higher freeboard than has been given to any modern battleship.

The main armour belt has a maximum thickness of 11 in., tapering to 6 in. at the forward and 4 in. at the after extremity of the vessel; the redoubt armour varies in thickness from 11 in. to 8 in.; the turrets and fore conning tower are 11 in. thick, and the after conning tower is 8 in. thick; the protective deck varies from 1¾ in. to 2¾ in. in thickness.

Special attention has been given to safeguarding the ship from destruction by underwater explosion. All the main transverse bulkheads below the main deck—which will be 9 ft. above the water-line—are unpierced except for the purpose of leading pipes or wires conveying power. Lifts and other special arrangements are provided to give access to the various compartments.

Mobility of forces is a prime necessity in war. The greater the mobility the greater the chance of obtaining a strategic advantage. This mobility is represented by speed and fuel endurance. Superior speed also gives the power of choosing the range. To gain this advantage the speed designed for the Dreadnought is 21 knots.

The question of the best type of propelling machinery to be fitted was also most thoroughly considered. While recognising that the steam turbine system of propulsion has at present some disadvantages, yet it was determined to adopt it because of the saving in weight and reduction in number of working parts, and reduced liability to breakdown; its smooth working, ease of manipulation, saving in coal consumption at high powers and hence boiler-room space, and saving in engine-room complement; and also because of the increased protection which is provided for with this system, due to the engines being lower in the ship—advantages which much more than counterbalance the disadvantages. There was no difficulty in arriving at a decision to adopt turbine propulsion from the point of view of sea-going speed only. The point that chiefly occupied the Committee was the question of providing sufficient stopping and turning power for purposes of quick and easy manœuvring. Trials were carried out between the sister vessels Eden and Waveney, and the Amethyst and Sapphire, one of each class fitted with reciprocating and the other with turbine engines; experiments were also carried out at the Admiralty Experimental Works at Haslar, and it was considered that all requirements promise to be fully met by the adoption of suitable turbine machinery, and that the manœuvring capabilities of the ship, when in company with a fleet or when working in narrow waters, will be quite satisfactory.

The necessary stopping and astern power will be obtained by astern turbines on each of the four shafts. These astern turbines will be arranged in series, one high- and one low-pressure astern turbine on each side of the ship, and in this way the steam will be more economically used when going astern, and a proportionally greater astern power obtained than in the Eden and Amethyst.

The ship has a total coal-bunker capacity of 2700 tons, and with this amount of coal she will be able to steam about 5800 sea miles at economical speed, and about 3500 sea miles at 18½ knots after allowance has been made for bad weather and for a small amount of coal being left in the bunkers. Stowage for oil fuel has been arranged for, but oil fuel has not been taken into account in estimating the radius of action, which, of course, will be greatly increased thereby.

Considerable attention has been devoted to the arrangements for the accommodation of the officers and men. In view of the increasing length and greater power of modern ships, the usual position of the admiral's and captain's quarters right aft is becoming more and more open to objection. Up to the present the principal officers have been berthed at the farthest possible distance from the fore bridge and conning tower, where their most important duties are performed. It has been decided that in this ship the admiral's and captain's quarters shall be placed on the main deck forward, near the conning tower; also that the officers' quarters shall be placed forward, both on the main deck and on the upper deck, in the fore part of the ship. Ample accommodation for the remainder of the crew is available on the main and lower decks aft.

The distribution of armament of the Dreadnought will be best understood by reference to the Plate in Part II. The ten 12-in. guns are mounted in pairs in five barbettes. One barbette is on the forecastle, but rather farther aft than usual, the guns being 35 ft. above the water-line. Four barbettes are on the upper deck, of which one is placed on either side nearly 100 ft. abaft the bow guns, the forecastle being recessed so as to enable the guns to fire ahead, while, as the upper deck is completely clear of obstruction, they will be able to fire nearly right astern. This disposition gives the ship a broadside fire from eight 12-in. guns. Four, and possibly six, guns can be used as bow chasing guns. The guns are so distributed that the blast of no pair of guns will interfere with the fire of the others. This is far from being the case with some ships of German, French and United States design. Amongst other new features in the Dreadnought the masts are built as tripods, which diminishes the risk of communication with the gun-sighting station and wireless telegraphy apparatus being destroyed; the boats are carried round the foremast and funnels, and the officers' quarters are located on the main deck forward.

Different opinions as to armament.

There is considerable difference of opinion in naval circles, British and Foreign, as to the abandonment of all secondary armament in the Dreadnought. On the one hand it is claimed that the naval battles of the future, like many of those in the Russo-Japanese war, will be fought at long range, and at long range 12-in. guns have an overwhelming advantage over the 9·2-in. and guns of smaller calibre, and it is further claimed that even at close range the smashing power of the 12-in. gun will compensate for the rapidity of fire of the smaller guns. Lt.-Commander Sims, Inspector of Target Practice to the United States Navy, whose report is printed in Part III., says:—"From the point of view of the efficiency of gun fire alone it would be unwise ever to build a man-of-war of any type whatever having more than one calibre of gun in her main battery. In other words, it may be stated that the abandonment of mixed battery ships in favour of the all-big-gun one-calibre ship was directly caused by the recognition of certain fundamental principles of naval marksmanship developed by gunnery officers." On the other hand it is contended that the decisive engagements in the Battle of Tsushima were fought at much shorter range than has sometimes been supposed, that the 6-in. gun played a very important part in deciding the issue of the battle, and that the hail of fire which can be directed from a battery of Q.F. guns on the upper works of an enemy's ship would demoralise the fire of her heavy guns.

Lessons of the Russo-Japanese war.

At the Battle of Tsushima the Russians had an immense superiority in guns of 9-in. calibre and over. They had twenty-six 12-in., fifteen 10-in., and four 9-in., or a total of forty-five heavy guns, to the sixteen 12-in. and one 10-in. of the Japanese. The Japanese, on the other hand, had thirty 8-in. and 160 6-in. Q.F., to the eight 8-in. and 102 6-in. Q.F. of the Russians. The 12-in. guns of the Japanese must have been the worse for wear, as Captain Semenoff, in his thrilling account of the battle, describes the Japanese 12-in. shells as "portmanteaux curving awkwardly head over heels through the air and falling anyhow on the water." From the above facts it appears reasonable to infer that the hail of high explosive shell from the Japanese 6-in. guns played a very important part in determining the issue of the battle. It may further be observed that arguments in favour of a ship being armed to fight actions at long range, which are drawn from the Russo-Japanese war, appear to be based on false premises. In the early actions of the war the Japanese were hampered by the consideration that the loss of a single battleship (of which they had only six at the opening of hostilities, reduced to four at Tsushima by the loss of the Yashima and Hatsuse) might involve for them the loss of the command of the sea. These actions were fought mainly at long range and were indecisive.

Foreign battle-ships.

In the new battleships building, or about to be laid down for Foreign Navies, the armament of the Dreadnought has not been generally copied. The two new battleships building in Japan, which were designed before the Dreadnought, and one of which, the Satsuma, has been recently launched, are to be armed with four 12-in. and twelve 10-in. guns, while twelve 4·7-in. guns are to be mounted in a battery on the main deck beneath the 10-in. guns. The six battleships of the Danton class building for the French Navy will be armed with four 12-in., twelve 9·4-in. and sixteen 12-pdr. guns. In the United States battleships the main armament is identical with that of the Dreadnought, but instead of 12-pdr. guns they carry fourteen 5-in. Q.F. guns. The particulars of the new German battleships have not yet been made public. The United States battleships are to have the same speed as the Dreadnought. The designed speed of the Japanese and French ships is said to be 19 knots.

Steam trials.

The steam trials of the Dreadnought took place in the first ten days of October and passed off most satisfactorily, the speed obtained on the measured mile being more than half a knot in excess of the designed speed. A correspondent of the *Engineer*, however, considers that new propellers should be tried, "sanguine prophets giving the ship 23 knots when so perfected."

At one-fifth Power.			At seven-tenths Power.			At full Power.		
Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.
knots.		lbs.	knots.		lbs.	knots.		lbs.
13*	5,013†	2·56	19·3*	16,930†	1·7	21·25*	24,712†	1·51

* By log. † Shaft horse-power.

The mean of four runs on the measured mile gave a speed of 21·6 knots with 27,518 I.H.P. At speeds under 15 knots the Dreadnought is said not to steer too well.

Experimental cruise.

The Dreadnought, on completion, was sent on a long experimental cruise of about 10,000 miles, in the course of which she touched at Arosa Bay, Gibraltar, Golfo d'Aranci (Sardinia), Gibraltar and Trinidad, and returned to Portsmouth by March 27th. The two voyages across the Atlantic, of 3430 miles and 3980 miles respectively, were, according to the programme, to be made at the average speed of 17 knots.‡ It is needless to say that there is no other battleship, and not many cruisers, which could attempt this. Of the six armoured cruisers which made the voyage from New York to Gibraltar in November, 1905, the Drake, Berwick and Cumberland just got across at 18½ knots, consuming the whole of their coal supply. The other vessels gave up the struggle. M. Michel mentions in his report that of the three armoured cruisers which crossed the Atlantic last year, only the Amiral Aube made the passage satisfactorily, while the Condé and Marseillaise had to undergo repair, and were lost to the fleet for several months.

Agamemnon.

The Agamemnon was launched from Messrs. Beardmore's works at Dalmuir on June 23rd, 1906, and the Lord Nelson on September 4th from Messrs. Palmer's yard at Jarrow-on-Tyne. Displacement 16,500 tons. Speed 18 knots. The armament is composed of four 12-in. guns of 50 per cent. greater power than guns of similar calibre mounted previous to 1906, and ten 9·2-in. guns, of which eight are mounted in twin barbettes, and two in single barbettes between the twin barbettes. The small armament includes thirteen 12-pdr. and twenty-two 3-pdr. guns, carried for the most part on a flying deck amidships, where they will be much exposed. There are five submerged torpedo-tubes. The French and Japanese in their new ships have, as already stated, followed the armament of the Agamemnon rather than that of the Dreadnought.

---

‡ This feat was accomplished on the voyage to Trinidad.

Protection is afforded by a complete water-line belt 12 in. thick amidships, tapering to 6 in. at the bow and 4 in. at the stern. The side between the barbettes and above the belt is protected by 8-in. armour to the level of the upper deck, the citadel being enclosed at either end by 8-in. diagonal bulkheads. The 12-in. guns are protected by 12-in. armour. Mr. Beardmore, the builder of the Agamemnon, stated at the launch that the 8-in. armour of to-day was more than equal to the 12-in. armour of four years ago.

These ships will have reciprocating engines. The boilers will be all water-tube, of the Babcock and Wilcox type in the case of the Agamemnon, of the Yarrow type in the Lord Nelson. The maximum coal capacity is 2500 tons.

Loss of the Montagu. ✓

The battleship Montagu (14,000 tons), of the Duncan class, stranded on the rocks at the South-West corner of Lundy Island at two a.m. on May 30th, during a thick fog. Strenuous attempts were made for several months to salve the ship, but were unsuccessful. The armament, including the 12-in. guns and many fittings, was removed before the ship was finally abandoned. The salving of the 12-in. guns was a work of great difficulty, for which the contract was undertaken by the Liverpool Salvage Company.

Hannibal.

The Hannibal has undergone an extensive refit, in which the efficiency of the armament has been improved. Hydraulic elevating appliances have been fitted to the 12-in. guns; the 6-in. guns have new sighting gear and the 12-pdrs. have been redistributed.

Armoured cruisers.

The Achilles, Cochrane, Natal and Warrior are of the same displacement as the Black Prince and Duke of Edinburgh (13,550 tons), but they carry an armament of six 9·2-in. and four 7·5-in. guns instead of six 9·2-in. and ten 6-in. guns. The sacrifice of six 6-in. guns is hardly counterbalanced by an increase in the calibre of the remaining four guns to 7·5-in. The Black Prince and her sister ship are, however, very low in the waist, and have proved themselves very wet ships and unable to fight their 6-in. guns in a sea way. In the cruiser action of June 29th, during the manœuvres, the Black Prince, "as green seas were sweeping her fore and aft," was easily put out of action by the Leviathan. The following particulars of the trials are from *Engineering*:—

Name of Vessel.	Makers of Machinery.	At one-fifth Power.			At four-fifths Power.			Full Power.		
		Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.
		knots.		lbs.	knots.		lbs.	knots.		lbs.
Achilles .	Hawthorn	14·69	4,882	1·88	21·58*	16,009	1·85	23·272*	23,275	2·03
Cochrane .	Fairfield .	14·3	4,911	2·06	21·37*	16,080	2·04	23·292*	23,654	1·99
Natal . .	Vickers .	14·18	4,913	2·03	21·35*	15,937	1·88	23·334*	23,592	2·01
Warrior .	Wallsend .	..	4,781	2·01	20·75	16,298	2·07	22·9†	23,641	2·33

* Measured Mile. † By Leg.

In all recent first-class cruisers, with the exception of the Devonshire, the casemates on either bow are connected with the forecastle, and a bulwark is carried aft as far as the mainmast. In the Black Prince there are no bulwarks, and the forward 9·2 in. guns are mounted in barbettes unconnected with the forecastle. A sea striking the ship on the bow, runs along the upper deck forward and breaks over the ship between the gun hood and the forecastle. The seaworthiness of these ships would be much improved could the 9·2-in. bow guns be mounted in a casemate connected with the forecastle.

Minotaur class.

The designed speed of these vessels was 22⅓ knots. All have exceeded the designed speed by about a knot. These four ships are fitted with Yarrow and cylindrical boilers.

Of the three armoured cruisers of the Minotaur class, the Minotaur, laid down on January 2nd, 1905, was launched at Devonport on June 7th, 1906; the Shannon, laid down a day later than the Minotaur, was launched at Chatham on September 20th, while the Defence is still building at Portsmouth. Displacement 14,600 tons. Estimated speed 23 knots with 27,000 I.H.P. The armament comprises four 9·2-in. guns in two barbettes, and ten 7·5-in. guns—a considerable improvement on that of their predecessors just described. The 7·5-in. guns of the Shannon will be carried in the citadel; the 7·5-in. guns of the Minotaur will be mounted in barbettes. The armament compares very favourably with that of their predecessors just described, as well as with that of foreign cruisers of similar size and date. The Minotaur class are protected by a Krupp steel belt 6 in. thick amidships, tapering to 4 in. and 3 in. at the bow and stern respectively. This armour is carried up to the main deck. The armour on the 9·2-in. gun barbettes is 8 in. in thickness.

In the following table are given the principal features, so far as known, of armoured cruisers under construction:—

Name.	Displacement.	Protection.	Armament.	Speed.	Cost, approximate.
	Tons.	Belt.			£
Invincible	17,250	7 in.	8 12-in.	25	1,730,000
Minotaur	14,600	6 in.	4 9·2-in., 10 7·5-in.	23	1,400,000
Achilles	13,550	6 in.	6 9·2-in., 4 7·5-in.	23	1,200,000
Ikoma	13,750	7–5 in.	4 12-in., 12 6-in., 12 4·7-in.	21*	
Kurama	14,600	7–5 in.	4 12-in., 8 8-in., 14 4·7-in.	20*	
Edgard Quinet...	13,780	6½ in.	14 7·6-in.	23	1,304,000†

* Doubtful. † Cost will probably be more.

Invincible class.

Of the vessels officially designated as armoured cruisers belonging to the 1905 programme, three have been laid down—the Invincible at Elswick, the Inflexible at the yard of Messrs. John Brown and Co., Clydebank, and the Indomitable at Fairfield. The dimensions of these vessels are as follows:—Length, 530 ft.; beam, 78½ ft.; draught, 26 ft.; displacement, 17,250 tons. Full particulars have not yet been made public. The proposed armament consists of eight 12-in. guns. The hull will be protected by a broad belt of 7-in. armour tapering to 4 ins. at the ends. The designed speed is said to be 25 knots, with 41,000 I.H.P. The cost of each ship, including armament, is £1,730,000.

For some years the armoured cruiser and battleship have been approaching one another in fighting power. In the Russo-Japanese war armoured cruisers were employed by the Japanese in the fighting line against battleships. The armoured cruiser gains superior speed at some sacrifice in protection and weight of armament. The Invincible class have been given the armament of a battleship, their superiority in speed being compensated for by lighter protection. Vessels of this enormous size and cost are unsuitable for many of the duties of cruisers; but an even stronger objection to the repetition of the type is that an admiral having Invincibles in his fleet will be certain to put them in the line of battle, where their comparatively light protection would be a disadvantage, and their high speed of no value.

Vessels removed from Navy List.

A considerable number of third-class cruisers, together with some obsolete battleships, gunboats and hulks, have been sold out of the

Navy during the past year. These include the third-class cruisers Katoomba, Ringarooma, and Tauranga (£8500 apiece), Phœbe (£9850), Bellona (£7200), Amphion (£11,500), torpedo gunboat Salamander (£3200), and the battleships Superb (£19,000) and Iron Duke (£15,100). On April 9, 1907, the following were sold at Chatham: Sans Pareil (£26,600), Conqueror (£16,800), Undaunted (£14,400).

The need of cruisers.

We have in previous volumes of the *Naval Annual* suggested that cruisers of moderate size were needed for the protection of commerce on extra European stations. No such cruisers have been laid down by the British Navy since the Challenger and Encounter, while many have been removed from the effective list, but it is satisfactory to know that the Boadicea, a swift unarmoured cruiser of 3300 tons, is to be laid down at Pembroke. In making the above suggestion, there is no intention to dispute the principle that the protection of commerce depends mainly on the command of the sea.

Merchant cruisers.

The Mauritania and Lusitania, built under special subvention from the Admiralty, have been launched.

Torpedo flotilla. The Swift.

The Swift, described as a special type of torpedo-boat destroyer, has been launched at Messrs. Cammell and Laird's yard at Birkenhead. Length, 345 ft.; beam, 34 ft.; mean draught, 10½ ft. She is a remarkable vessel, and will, if the designed speed is realised, be the fastest ship in the world. The cost is enormous for a ship without fighting power. The dimensions and other particulars are compared with those of ocean-going destroyers, the Scout class, and the third-class cruiser Amethyst, in the following table:—

Name.	Description.	Displacement in tons.	I.H.P.	Speed.	Coal or oil.	Cost, including guns.	Armament.
				knots.	tons.	£	
Swift .	Special destroyer .	1,800	30,000	36	180	280,509	Four 4-in.
Cossack	Ocean destroyer .	795	14,000	33	76	143,340	Three 12-pr.
Saracen .	ditto	890	15,500	33	84	..	Two 4-in.
Adventure	Scout . .	2,940	15,850	25·4	150	270,263	Ten 12-pr., eight 3-pr.
Amethyst	3rd class cruiser .	3,000	14,200	23·4	300	228,426	Twelve 4-in., eight 3-pr.

Destroyers.

The destroyers of the River class (now all completed) have a displacement of 540–590 tons and a speed of 25½ knots, which is hardly sufficient to enable them to overhaul some foreign torpedo boats in smooth water. The five ocean-going destroyers Ghoorka, Cossack, Tartar, Mohawk and Afridi, building respectively at Messrs. Hawthorn Leslie, Cammell, Laird and Co., Thornycroft, J. S. White and Armstrong, Whitworth, have a displacement of 765–795 tons, and are consequently of about the same size as the torpedo gunboats of the Circe class. With 14,000 to 14,500 H.P. the estimated speed is 33 knots. They are fitted to burn oil fuel, of which they carry from 73 to 95 tons. Two of a larger type, the Saracen and Amazon, are building respectively at Messrs. White's and Messrs. Thornycroft's. Displacement, 890 tons.

Torpedo boats.

Of the twenty-four coastal destroyers, now to be classified as torpedo boats, seven are being built by Messrs. Thornycroft, nine by Messrs. J. S. White, three by Messrs. Yarrow, two by Messrs. Denny, two by Messrs. Hawthorn Leslie, and one by Messrs. Palmer. Speed, 26 knots. Armament, two 12-pdrs. Estimated cost, £43,000 apiece.

The Gadfly, built by Messrs. Thornycroft, attained a speed of 27·52 knots on the measured mile. She is fitted with Parsons turbines and the Admiralty apparatus for burning oil fuel. On the twenty-four hours' low-power consumption trial the oil burnt was 8·88 tons and the speed attained 12 knots. As the maximum supply of oil is 40 tons, the Gadfly should be able to steam over 1200 miles at economical speed.

Advantage of turbines and oil fuel.

The following interesting observations on the advantages of the adoption of turbines and oil fuel for torpedo boats are quoted from *Engineering*:—

> The striking characteristic of the engine-room of this vessel is its roominess and comfort. The machinery is no lighter probably than that which would have been installed if reciprocating engines had been used, but the gain in comfort, safety and simplicity is enormous. The engine-room equipment does not contain other novel features, unless it is that wet and dry-air pumps, made by Weir, are placed in the after part of the engine-room. The engines for the Gadfly were made by Messrs. Parsons, at their Wallsend works, but the sets for the other four boats are being constructed by Messrs. Thornycroft, at their Woolston works.
>
> The boilers, as stated, are of the Thornycroft water-tube type, and are fired by oil fuel. The system is that which has been developed by the Admiralty, and certainly appears to work with great success. As our readers are aware, experiments have been carried on for a long time past by engineers belonging to the Service, and those who have been engaged in them are to be congratulated at having arrived at what seems to be a fairly perfect result. We are, for reasons stated, unable to describe the process; but it may be said that the success reached has been due to careful improvement in detail rather than to any radical departure from precedent. The oil used is a thick treacly substance of the appearance of crude Texan oil. It is evidently thoroughly atomised, as the boat runs—at any rate, after the boilers are once warmed up—without smoke or smell, and the chimneys remain quite cool, or cool enough to preserve the paint. The furnaces of the boilers are only adapted for oil fuel, there being no provision for burning coal. Probably oil-burning adds somewhat to the weight of the boiler installation, though not much, as a certain amount of firebrick must be used, and this would outweigh the saving through absence of fire-bars.
>
> There is, however, a very important saving in the adoption of oil fuel, as with turbine-engines—that is, in the *personnel*. It would, we believe, be quite possible, if necessary, to arrange the Gadfly so that she might be run single-handed. In place of having to shovel coal on to the furnace, to trim it on to the stokehold floor, and clean fires at intervals, the boiler attendant—"stoker" would be a misnomer—has

nothing to do but manipulate his feed and burner-valves if required. The fire remains constant, and consequently the steam pressure varies through a very small range—so long, of course, as the demand for power is constant. Much the same kind of thing may be said of the turbine-engines. Those who can remember the early days of torpedo-boat trials, with a crowd of men with oil-feeders, squirts, mops, and even half-pint tins, bombarding the engines with lubricant, can best appreciate the quiet orderliness of a turbine-driven boat.

New torpedo.

Important trials took place in December with a torpedo fitted with a new arrangement designed by Messrs. Armstrong, Whitworth & Co. for heating the air used to propel it. The *Times* correspondent who reported on these trials states:—

> It was shown at Weymouth on Tuesday that a torpedo fitted with a heater could travel for double the distance at a given speed and the same expenditure of air that the torpedo without heater could. In other words, there was a gain of about 100 per cent. in power due to the heater. If the torpedo be run for the same distance with a heater as a similar torpedo without a heater, the 100 per cent. gain of power would be realised by increasing the speed, and at a range of 2000 yards this increase is from 26 knots to 33·5 knots. This speed of 33·5 knots is the highest which has ever been realised with a torpedo for a range of 2000 yards.
>
> There is no doubt that, if the torpedo were constructed especially to use hot air instead of cold air as at present, the gain in power would be greater, and it has been decided to proceed at once with the designs of a new torpedo.

At a further experiment it was reported in the *Times* that a speed of 35·3 knots was obtained for a distance of 2000 yards.

Gunnery.

The Admiralty have published the reports of the Director of Naval Ordnance on the Test of Gunlayers and on Battle Practice, giving detailed statistics of the performances of the various ships of the Fleet. The former starts with a prefatory note:—"Their lordships note with extreme satisfaction the very marked improvement in the results as compared with former years, including even those of 1905, when the Fleet showed a great advance over previous results. They further note that this improvement is due to a higher standard generally throughout the Fleet." A similar remark is made as to Battle Practice, where the improvement made, in spite of the considerable increase in range, was remarkable. The attention given by the Admiralty in recent years to the encouragement of gunnery has borne good fruit. The Inspector of Target Practice, Sir Percy Scott, and the Director of Naval Ordnance, Captain Jellicoe, are to be congratulated on the results obtained. The publication of these statistics has had a most excellent result in promoting emulation amongst the ships and the squadrons of the Fleet. Extracts from the reports are published in Part III.

Navy Estimates 1907–8.

The Navy Estimates for 1907–8 amount to £31,419,500, a net decrease of £450,000 as compared with the Estimates of 1906–7. Making allowance for the fact that the cost of new works which have been hitherto provided for by loan are borne on the estimates of the year, the real decrease in naval expenditure is £1,427,091. The principal items of decrease are in Vote 8, Section III, shipbuilding by contract (£942,400), and in Vote 9, armaments (£637,300). The principal increases are under Shipbuilding and Repairs in the dockyards (£350,300), and Naval Works (£803,900). On new construction only £8,100,000 will be spent in 1907-8, as compared with £9,235,000 in 1906-7. The total numbers voted for the Navy are to be reduced from 129,000 to 128,000.

Reduced new construction.

The chief features in the Navy Estimates are, firstly, the fact that the main source of economy continues to be the "Vote for New Construction," and, secondly, the abandonment of the policy of providing for new works under Loan Acts. In Chapter III are given the grounds on which a temporary reduction in the shipbuilding vote may be justified; but it cannot be too frequently insisted upon that a decrease in the shipbuilding vote has a direct influence on the strength of the Navy in the future. It is not an economy in the same sense as a reduction in other votes. The reduction in the vote for contract shipbuilding comes at an unfortunate moment for the private shipyards, who, after a period of great activity, are not too plentifully supplied with orders for the Mercantile Marine.

Naval works.

The decision that there shall be no more Loan Bills to complete the works authorised under the series of Naval Works Acts from 1895-1905 comes none too soon. In an article in the *Naval Annual* of 1903 the Naval Works then authorised were reviewed in detail, and it was pointed out that in some cases the large expenditure involved was difficult to justify, and that our Naval Works policy was tending to extravagance. We were then preaching to deaf ears. The policy adopted on this question by the present administration will lead to economy in the best sense. It is satisfactory to know that the estimates for new works shown in the Act of 1905 have been reduced by £2,366,933, and it is to be hoped that there will ere long be economies in the Works Department itself.

Personnel.

The small reduction in the total numbers voted for the Navy for the present leads to no economy, but it is a step in the right direction.

Naval Reserves.

The steady and continuous increase for many years in the permanent force of the Navy, against which we have so often protested in these pages, has been largely responsible for the increase in Naval Votes. For many years little encouragement was given to Naval Reserves, but since 1900-1 the expenditure under Vote 7 has nearly doubled. The Fleet Reserve was established on January 1st,

1901. The numbers borne on the 1st January in 1900 and in 1907 in the various classes of the Reserve are as follows:—

	1900.	1907.
Royal Naval Reserve—Officers and men	27,579	32,252
Pensioners—Seamen and Royal Marines	11,952	7,083
Royal Fleet Reserve	—	17,520
Total	39,527	56,855

The main source of increase is in the Fleet Reserve, which is composed partly of pensioners, partly of short service men. The introduction of short service into the Navy no doubt enables the Fleet Reserve to be rapidly increased, but it is a departure from a long-established system which has given us a *personnel* of high quality, and in the long run may have a bad effect. Included in the total for the Naval Reserve are 3735 Naval Volunteers, of whom nearly 1000 were embarked for training. The force is efficient.

Entry in the Naval Reserve, which has been closed for some time, has now been re-opened. It is regrettable that the development of the Colonial Naval Reserve, more especially in Newfoundland, is not to be pushed more vigorously. A total of 1000 men from Newfoundland and Australia is a very feeble draft for the naval defence of the empire on so large a seafaring population. Malta provides as many men for the Naval Reserve as the whole of Australasia.

The Australian subsidy.

It is generally understood that the agreement of 1902 with regard to the Australian subsidy is to be cancelled during the present year; and that the Australian Commonwealth propose to build a flotilla of destroyers, which will be placed under Australian control. Such a flotilla may provide a command for a certain number of naval commandants, who appear to have been largely responsible for the agitation against the agreement of 1902, but will not be of much value against any attack that is likely to be made on Australia. The money spent by the different colonies before confederation in the maintenance of more or less useless ships was to a great extent wasted. Under Sir John Forrest, as Minister of Defence, sounder views prevailed. Not only Australians, but Canadians and South Africans, may in time come to recognise, as Sir John did in the memorandum submitted to the Colonial Conference of 1902, that "their aim and object should be to make the Royal Navy the Empire's Navy, supported by the whole of the self-governing portions of the Empire, and not solely supported by the people of the British Isles.

THE COLONIES AND IMPERIAL DEFENCE.

The Colonial Conference.

Before the present volume is published the Colonial Conference will have assembled. One of the most important subjects to be discussed is the relation of the Colonies to Imperial Defence. The Defence of the Empire is becoming too heavy a burden for the people of the mother-country alone. Both Naval and Military expenditure have increased enormously in recent years, and that increase has involved heavy taxation. The income-tax, which should be our great reserve for emergencies, is after four years of peace still at war level. The present Government owed their majority in large measure to the desire of the country for economy. They have taken steps to reduce both Naval and Military expenditure. As pointed out elsewhere in these pages a reduction in the expenditure on New Construction (and it is under this head that the chief reduction in Navy Estimates has taken place) may for the moment be justified. The reduction in Naval expenditure has been made without injury to the Defence of the Empire. It is far otherwise with the reduction in the Army. The Army was already too small for the duties it might be called upon to perform in certain quite conceivable contingencies. The abolition of twelve battalions of infantry and the reduction in the artillery has necessitated the partial or complete withdrawal of British troops from several Colonial garrisons. For the defence of British interests in India and the Near East an increase rather than a reduction in the Army was desirable. What part, in the light of the above considerations, ought the Colonies to play in Imperial Defence? There is a not unreasonable indisposition to make a money contribution to Defence under present conditions—a feeling which prevails probably more strongly in Canada than in other parts of the Empire. "If you want us to help," said Sir Wilfrid Laurier in 1904, "you must call us to your councils." That on the present occasion some provision may be adopted for giving continuity to the work of the Conferences (to use the words of the Report of the Committee of the British Empire League in Canada of March, 1907) is possible. But it is not possible to give effective representation to the Colonies in the Councils of the Empire under the present constitutional arrangements of this country, which involve matters affecting the whole Empire and questions affecting either the whole of the United Kingdom or one portion of it being dealt with in a single overburdened Parliament.

Admitting that it would be unreasonable to expect a contribution commensurate with their population or resources from the Colonies under present circumstances, it appears that the best assistance they can give to the Naval Defence of the Empire is on the lines of the arrangement concluded in 1902 with Australasia, through the efforts of Sir John Forrest and by the development of a strong Naval Reserve. That arrangement may be not altogether satisfactory, but it is the best temporary solution of the question.

It is a sound principle of Imperial Defence that the Naval Defence of the Empire must be under one central control. The system of petty local Navies has already been tried and found wanting. They cannot be really efficient,* and they are certain to lead to waste of money. If Colonial opinion is opposed to making any contribution to Naval expenditure under present conditions, it would be better to devote the money that might be spent on a local Navy to the development of the military forces in numbers and efficiency. The Military Defence of the Empire is outside the general scope of the *Naval Annual,* except in so far as the Army is charged with the defence of Naval Bases. As already mentioned, the garrisons of these have in several cases either been reduced or withdrawn in consequence of the strain thrown on our small regular army in providing reliefs. Can the Colonies assist us in our difficulty, which is almost more one of want of men than want of money?

Colonial troops for India.

The following suggestion was first put forward in 1897, after the present writer had returned from a long tour through the Empire, and seems well worthy of reviving at the present time. Let each self-governing portion of the Empire raise a regiment or regiments of cavalry or infantry for service in India. These Colonial troops would release a proportionate number of British regiments and immediately relieve the strain under which the Army is breaking down. While in India, they would be paid, as British troops are, by the Indian Government. The expense of keeping up depôts or depôt battalions to provide reliefs would fall on the Colonial taxpayer. An incidental but very real advantage of this proposal to the Colonies would be the experience of military work on a large scale gained by the constant stream of officers and men passing through the Colonial regiments serving in India. Such experience would be of immense value in improving the efficiency of the military forces of their respective colonies.

---

* "Besides the enormous cost of replacing the Fleet from time to time with modern ships, there would be no change for the officers and crews, who would go on year after year in the same sixty ships subject to the same influences, and, I fear, with deteriorating effects."—Sir John Forrest.

T. A. BRASSEY.

CHAPTER II.

FOREIGN NAVIES.

FRANCE.

Estimates.

THE Navy Estimates proposed for 1907 were, before being submitted to Parliament, reduced by the pressure of the Minister of Finance to £12,737,775* (318,444,381 francs), a reduction of £265,000 as compared with those for 1906. The vote for new construction, including armaments, is £4,266,000, including battleships, £2,010,476; armoured cruisers, £926,367; destroyers, £539,300; submarines, £719,200. France is suffering from financial stringency, hence the reduction in the Navy Estimates. Complaints were made that no improvement in the pay and prospects of the *personnel* was proposed by the Admiralty, but M. Thomson, Minister of Marine, has promised some improvement in the position of lieutenants.

Programme.

The programme prepared by the Superior Council of the Navy and adopted by the Government is intended to increase the strength of the French Navy, by the year 1920, to the following establishment:—

38	Battleships.
20	Armoured Cruisers.
6	Scouts.
109	Destroyers.
170	Torpedo Boats.
82	Offensive Submersibles.
49	Defensive Submersibles or Submarines.

By reference to pages 8 and 9 of the *Naval Annual* of last year, where the programme of the Superior Council of the Navy is given, it will be observed that twelve second-class cruisers have been struck out of the programme, while the number of battleships has been increased from thirty-four to thirty-eight, and of first-class armoured cruisers from eighteen to twenty. For smaller vessels the programme remains practically the same.

French naval policy. M. Michel's views.

M. Bos, the Reporter to the Committee of the Budget of 1906, urged the construction of battleships to maintain the naval power of France. M. Michel, the Reporter of the Budget of 1907, does not share the views of his predecessor. In the introduction to his

---

* Credits finally voted for 1907, £12,486,792.

Report he enters a strong plea for economy, and welcomes the establishment of the Council of National Defence as an excellent measure tending to bring the programme of naval construction into harmony with national policy, which he lays down as follows:—

"Maintenir l'intégrité de notre territoire national, conserver et mettre en valeur notre domaine coloniale, sans arrière-pensée de conquête nouvelle ni de guerre offensive, tel est l'esprit de cette politique."

M. Michel then examines the conditions which would exist in the event of war, (1) with England, (2) with Germany. He considers it out of the question for France to attempt to build up a navy capable of contesting the command of the sea with this country, and that it is therefore a waste of money to construct battleships. From the point of view of possible hostilities with England, M. Michel thinks that the proper policy of France would be to construct an adequate flotilla of submarines or submersibles, which would ensure the inviolability of the French ports, and render navigation in the Western basin of the Mediterranean and the passage of the Straits of Gibraltar practically impossible for a fleet. As regards Germany, M. Michel holds that the issue must be decided on land, and that the possession of the command of the sea would be of as little value to France as in the war of 1870. If the French armies are defeated and French territory invaded, as it was in 1870, one of the conditions of peace would be the surrender of the French Fleet.

Consideration of.

The Reporter says that there being a possibility of war with Germany, it would be a mistake to divert money from the Army to the Navy, but the soundness of M. Michel's contention depends entirely on the question whether the French Army would be able to hold its own against the army of Germany. The French Army is numerically inferior to that of Germany, but, on the other hand, the French frontier is protected by a formidable chain of defensive works which the Germans would have difficulty in passing. The military situation, however, is complicated by the possibility of a German advance through the valley of the Meuse, in violation of the neutrality of Belgium. If, on the other hand, the French Army be able to hold its own against Germany and to prevent the invasion of French territory, it would appear to be the true policy of France to build up a navy capable of effectively contesting the command of the sea with that of Germany. Certainly if this were not done, and the German Fleet gained command of the sea, it would be an easy thing to land an army corps on the French coast and compel a struggle on two fronts.

In view of the greater relative growth of the population and resources of Germany, as compared with those of France, the disparity in the material strength between the two countries will, in all probability, continue to increase, and if this be the case, it may be beyond the power of France to maintain an army capable of securing her territory from invasion, and to maintain at the same time a navy capable of contesting the command of the sea with Germany.

M. Cuvinot in the Senate.

M. Cuvinot, the Reporter of the Senate upon the Navy Estimates, had also various criticisms to offer upon the programme. While admitting that the six battleships must be pushed forward as rapidly as possible, M. Cuvinot asserted that they constituted only a part of the programme, and that, to construct all the vessels proposed, the Naval Budget must be increased from 312,000,000 francs in 1907 to 419,000,000 francs in 1920, after which the outlay might fall below 400,000,000 francs. He was thus led to the conclusion that the programme was too ambitious. A few years ago M. de Lanessan asked for twenty-eight battleships; why were thirty-eight required now? "Il est essentiel qu'en marine on sache ce que l'on veut faire, et où l'on va aussi." M. Cuvinot's argument was briefly put thus:—"Depuis longtemps nous marchons à l'aveugle, je demande qu'on éclaire la route et qu'on nous indique le but à atteindre." M. Thomson disputed M. Cuvinot's figures, and declared that the mean expenditure per annum involved by the naval programme would not exceed 125,000,000 francs, and that the maximum would be 135,000,000 francs. The resolution approving the Government's proposals was adopted.

New docks.

Some of the opposition to the Minister's proposals came from a belief that the building of battleships of large displacement would cause difficulties at the ports, and that there would not be docks to receive them. Upon this matter the Minister threw some interesting light. He said that by the time the new battleships were ready the docking accommodation would be ample. Docks require to be lengthened at Brest, Cherbourg, Lorient and Toulon, and it is intended to make new docks at Brest, Cherbourg, Lorient and Rochefort. When the battleships are completed, there will be ready to receive them two docks at Cherbourg, four at Brest, one at Lorient, four at Toulon, two at Bizerta, one at Dakar, one at Diego Suarez, and probably a dock or floating dock at Saigon.

Delay in commencing programme.

The new programme of construction described in the last *Naval Annual* comprised six battleships of 18,000 tons displacement and 19 knots speed, to be laid down in 1906. The commencement of these ships was, in the first instance, delayed by doubts as to the advisability or otherwise of adopting the turbine system of propulsion. A commission was sent to England to inquire into the matter, and reported in favour of the proposed system, and after the successful trials of the Dreadnought, it was decided to fit the new ships with turbines. In the second place, in order to hasten the completion of the Patrie class, a sum of £200,000 was diverted to them from the votes for the new battleships. A third cause of delay has been the opposition of the Reporter of the Budget, M. Michel, who proposed to lay down only three, instead of six, battleships during the current year.

The grounds on which M. Michel based his opposition were as follows:—

1. Inferiority in speed and armament of the French battleships as compared with the Dreadnought.

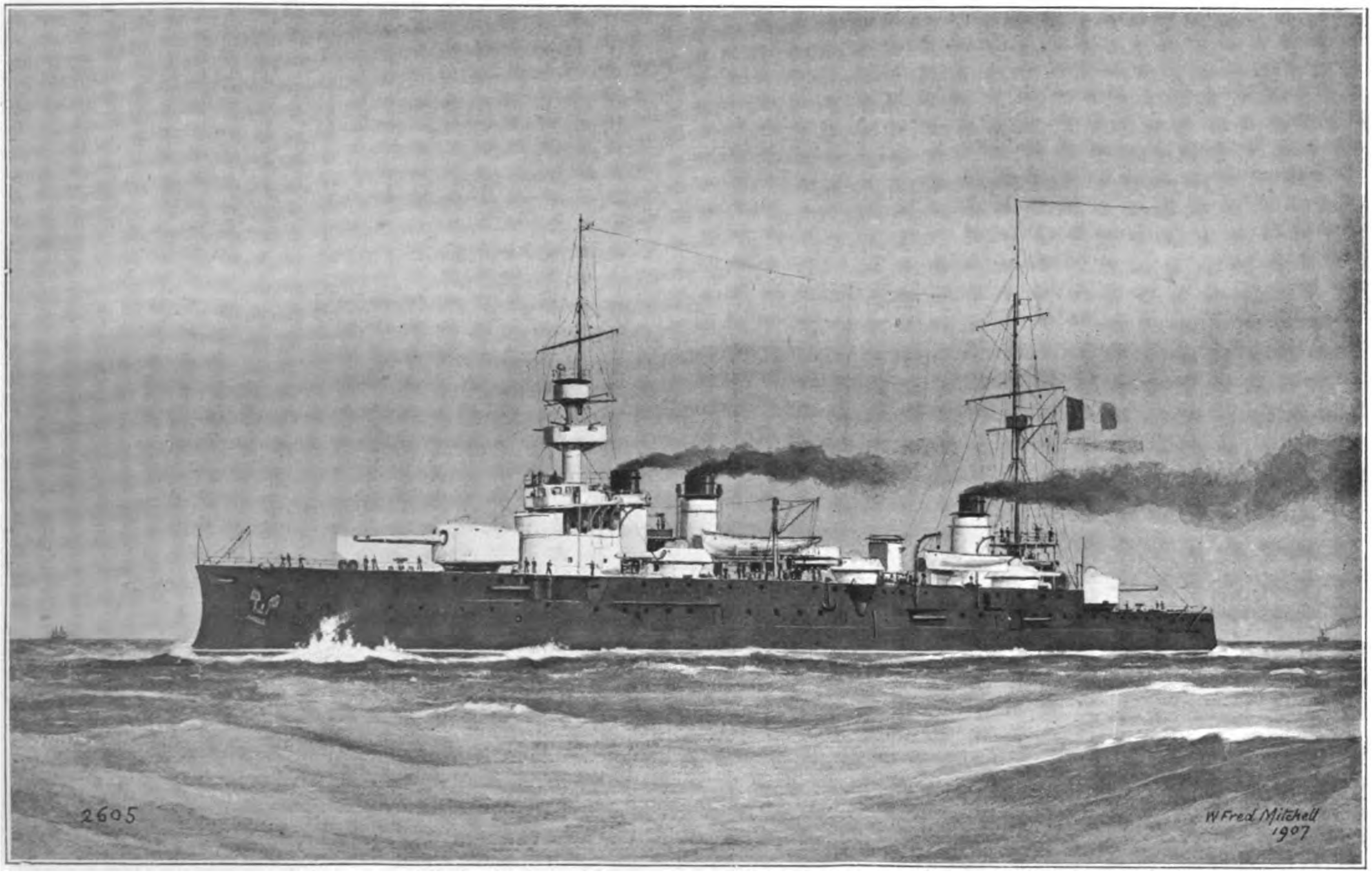
2. The better policy of rapidly completing a smaller number of ships than of having a larger number in course of construction.

3. Neglect of the destroyer and submarine flotillas indicated by the proposals of the Minister, M. Thomson.

M. Michel, as already indicated, is a partisan of the *jeune école;* but in spite of his opposition, that of M. Pelletan, and others, the Chamber by 293 votes against 112 adopted the programme of the new construction proposed by the Ministry.

New battleships.

The six new battleships have been named the Danton, Mirabeau, Voltaire, Diderot, Condorcet, and Vergniaud. Of these, the Danton is building at Brest and the Mirabeau at Lorient. The four remaining ships are to be built by contract, the Voltaire being in hand at La Seyne, and the Vergniand at Bordeaux, at the Chantiers de la Gironde. The following dimensions and other particulars are given in the Navy Estimates:—Displacement, 17,710 tons; length, 476 ft.; beam, 84 ft.; draught 27 ft.; I.H.P., 22,500. The maximum coal capacity is 2010 tons, giving a radius of action at 10 knots of 8130 miles. The armament will comprise four 12-in., twelve 9·4-in., sixteen 3-in., and eight 1·8-in. guns, and two submerged torpedo tubes. The 12-in. guns are to be mounted in pairs in barbettes protected by 12-in. armour, one barbette being, as usual, in the forecastle, the other in the upper deck aft. The 9·4-in. guns are also to be mounted in pairs in barbettes of 8·7-in. armour on the level of the upper deck. These barbettes, as will be seen from the plate in Part II., will be well distributed, and not concentrated, as in the Lord Nelson, in the centre of the ship. The design was severely criticised by a writer in the *Yacht,* who urged that the armament should consist of 12-in. guns only. Both the 12-in. and the 9·4-in. guns will be of the new model, firing a considerably heavier projectile than their predecessors, weighing 440 kilos as compared with 338 kilos for the 12-in. guns,



FRENCH BATTLESHIP "RÉPUBLIQUE."

and 220 kilos instead of 170 kilos for the 9·4-in. guns. M. Thomson estimates that the weight of fire of the Danton will be 7480 kilos; of the Dreadnought, 6160 kilos, and of the Ersatz Bayern, 7650 kilos.

Protection will be given by a complete armoured belt, 10·8 in. thick amidships, tapering to 8 in. at the end. Above the belt the side is to be protected by 8·7-in. armour for a considerable proportion of the length.

The complement will consist of 31 officers and 650 men. The cost of the dockyard-built ships is set down as £1,803,000, and that of the contract-built ships at £2,000,000. The former are to be completed at the end of 1910, the latter in 1911.

Trials of Patrie and République.

The battleships Patrie, launched in 1903, and the République, launched in 1902, have passed through their trials, of which the following are the particulars:—

Name.	Makers of Machinery.	Consumption Trial.			24 Hours' Natural Draught.			Four Hours' Full Power.		
		Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.	Speed.	I.H.P	Coal.
		knots.		grs.	knots.		grs.	knots.		grs.
Patrie .	La Seyne	7·9	1·233	590	17·82	11,660	716	19·125	17,859	827
République	Chantiers de la Loire	7·8	1·263	565	16·74	10,965	711	19·15	19,626	860
Contract				600–800				18·00	17,500	

The speed obtained on the full power trial in both cases exceeded by over a knot the contract speed. The coal consumption at low speed was considerably under that contracted for. The *Yacht* reports that the speed in the natural draught trial could have been indefinitely maintained without distressing the stokers.

The remaining ships of the class, Démocratie, Liberté, Justice, and Vérité, are to be completed in the current year.

Armoured cruisers. Jules Ferry.

The trials of the Jules Ferry (12,351 tons) were interrupted in August by trouble with two of the Du-Temple-Guyot boilers. On a full-power trial in December she attained a speed of 22·8 knots with 28,753 I.H.P. and a coal consumption of 836 kilos per I.H.P. per hour. On a preliminary trial, of which the results were given in last year's *Naval Annual*, the speed attained was 23 knots. This ship will have been nearly a year going through trials before she is completed.

Victor Hugo.

The trials of the Victor Hugo, sister ship to the Jules Ferry, was also interrupted by the bursting of a boiler tube. She was laid down in March, 1902, and will have consequently been nearly five years under construction.

Jules Michelet.

The Jules Michelet is completing afloat.

Ernest Renan.

The Ernest Renan, 13,427 tons, was launched on April 9th at St. Nazaire. She was laid down in 1902, and will not be completed till 1908, and possibly later. She will have been over six years in course of construction, and will have cost close on £1,500,000, or nearly half as much again as the Drake class, which are slightly larger, have the same designed speed, and carry an armament of two 9·2-in. and sixteen 6-in. guns as compared with four 7·6-in. and twelve 6·4-in. guns. The other ships of the class are the Edgar Quinet and the Waldeck-Rousseau.

Destroyers.

Of the destroyer programme, the Stylet and Tromblon have been completed, and the Pierrier, Mortier and Carquois were to be ready in February, 1907. The Trident, Fleuret, Coutelas, Glaive and Poignard are to be completed in 1907, and the Cognée, Hache and Massue in 1908. All these are in hand in the dockyards. The following are building in private yards:—Sape and Gabion (to be completed 1907), Sabretache, Oriflamme, Etendard, Fanion, Branlebas and Fanfare (1908); M 55 to M 60 (1909), M 61 to M 65 (1910). The new boats are of a more powerful class, and displace 350 tons. The Tirailleur, building at the Chantiers de la Gironde, Bordeaux, displaces 410 tons, is to steam at 28 knots, and will carry six 9 prs. She will have a triple-expansion engine driving a central screw, and two lateral screws driven by Breguet turbines.

Torpedo boats.

Some torpedo boats are to be completed in 1907, but none are to be laid down. The boats not yet ready are in the series 318-321 and 329-367. The highest numbers 368 and 369 have been completed at Toulon.

Submarines and submersibles.

Of submarine and submersible boats, the Omega submarine will be completed this year at Toulon, and the submersibles Emeraude, Opale, Rubis, Saphir, Topaze and Turquoise at Cherbourg and Toulon. Two submarines of a special class, Circé and Calypso, are to be out of hand next year, and the small boats Guêpe 1 and Guêpe 2 in 1908. The nineteen new boats, Q 51 to Q 69, begun in 1905, are all to be completed by 1910, and thirty other boats, Q 70 to Q 99, by 1911.

The Ministry of Marine, considering it desirable, however, to enter upon a larger policy of submarine construction, and in order to remove, if possible, the doubts that attended submarine warfare and navigation, has issued orders that three large submersibles shall be put in hand experimentally with the hope of arriving at a definite type. A competition of designs was invited among members of the Génie Maritime, and as a result two of the boats are to be built at Cherbourg, respectively from the designs of M. Hutter and M. Radiguer; while another will be put in hand at Rochefort from the plans of M. Bordelle; and possibly a fourth may be built at Toulon from the plans of M. Maurice. Of the first three, one will have a displacement of 577 tons (810 tons submerged), and will be 196 ft. 9 in. long; the second 530 tons (628 tons submerged), length 210 ft.; and the third 555 tons (735 tons submerged), length 183 ft. 9 in. The surface speed is to be 15 knots, instead of 12 as heretofore, and the submerged speed 10 knots instead of 6 or 7 knots, while the range will be 2500 miles. Propulsion will be on the surface, by means of Diesel or steam motors, and submerged by electric motors. The construction is to be hastened as much as possible, and no other boats of these classes will be laid down until the trials have taken place. There appears, however, to be a general opinion in the French Navy in favour of the Sirène type of M. Laubeuf.

GERMANY.

The Navy Estimates for 1907 amount to £13,628,000, an increase of £1,280,000 over those for 1906. The vote for new construction is £4,203,000 as compared with £3,596,000 in 1906. There is an increase of £350,000 in the vote for armaments.

New programme.

The programme of new construction for 1907 includes two battleships—the Ersatz Baden and Ersatz Württemberg—one large cruiser, two small cruisers, and two divisions of torpedo boats. The battleships will cost £1,825,000 each, according to the Navy Law Amendment Act, 1906. The cost of the large cruiser will be £1,800,000, as compared with £1,575,000 proposed in that Act. According to the programme, which was given last year, two battleships are to be laid down each year up to and including 1910. One battleship will then be laid down yearly up to 1916, and the programme will conclude in 1917 with two battleships. The commencement of the battleships of the 1906 programme, Ersatz Sachsen and Ersatz Bayern, was greatly delayed, mainly, no doubt, owing to the desire of the Germans for fuller information as to the characteristics of the Dreadnought. It is questionable whether work had actually begun upon them at the close of the year. They are to be built respectively at the Weser Yard, Bremen, and the Imperial Dockyard, Wilhelmshaven. They will be completed in 1910, and the battleships of this year, Ersatz Baden and Ersatz Württemberg, in 1911. There has also been delay with the armoured cruiser E, which was laid down in the autumn of 1906. Another vessel of the class, F, is to be laid down in 1907, and will be supplied with turbines. The programme includes one armoured cruiser each year up to 1916, except in 1911 and 1912;

when two are intended to be laid down. Two small cruisers, as well as two divisions of destroyers, are to be begun each year up to 1917.

The enlarging of the Kiel Canal in order to enable the new battleships and cruisers to pass through it will cost £11,000,000. The charges will be borne on the Estimates of the Minister of the Interior.

Battleships completed.

The last battleship of the Braunschweig class, the Lothringen, has been completed. On the 24 hours' trial under natural draught she attained a speed of 16·6 knots with 11,574 H.P. On the 6 hours' full-power trial under forced draught the speed attained was 18·54 knots, with 16,950 H.P.

The Deutschland, the first of the class to which she gives the name, has passed through her trials. She is fitted with six cylindrical and eight Schultz-Thornycroft water-tube boilers. On the 24 hours' natural draught trials she attained a mean speed of 17·1 knots with 11,377 I.H.P., and a coal consumption of 1·75 lbs. per I.H.P. per hour. On the full-power trial with 16,939 I.H.P. she attained a speed of 18·5 knots, the coal consumption being 1·8 lbs. per I.H.P. per hour.

Battleships launched.

The Schlesien (ex R), of the same class as the Deutschland, was launched from the Schichau yard at Danzig on May 29th. The Schleswig Holstein (ex Q) was launched at Kiel on December 17th.

Full particulars of the new battleships have not yet been made public. It is rumoured that they will have a displacement of 18,700 tons, and a speed of 19·5 knots.

Armoured cruisers.

The armoured cruiser Roon (9350 tons) attained a speed of 21·17 knots on her trials, with 20,625 I.H.P. The estimated speed was 20 knots.

The armoured cruiser Gneisenau (ex C), of 11,420 tons displacement, was launched on June 14th. Her sister ship, the Scharnhorst (ex D), was launched at the yard of Blohm and Voss, at Hamburg, on March 22nd, 1906. These ships were described in the *Naval Annual* of last year.

Small cruisers.

The small cruiser Stuttgart (ex O) was launched at Danzig on September 26th, 1906, the Nürnberg (ex Ersatz Blitz) from the Imperial Dockyard at Kiel on August 28th, and the Stettin (ex Ersatz Wacht) at the Vulcan Yard, Stettin, on March 3rd, 1907. Displacement, 3350 tons; estimated speed, 23·5 knots, with 13,200 I.H.P. The Stuttgart will be fitted with turbines made by the General Electrical Company in Germany. The Ersatz Pfeil and Ersatz Comet, which are to be larger and faster (24·5 knots) vessels of the class, are in hand respectively at Danzig and the yard of Messrs. Blohm and Voss, of Hamburg. They are both to have Parsons turbines, and it is understood that the two to be laid down in 1907 will have turbines of the Rathenow and Zoelly types for purposes of comparison.

Destroyers.

Six destroyers have been built at the Germania Yard, Kiel (G 132 to G 137), the last of them to be launched in 1907. Displacement, 420 tons; speed, 28 knots. G 137 is larger, 560 tons, 30 knots, Parsons turbines. The destroyers S 138 to S 149 (twelve boats) has been launched at Elbing. Displacement, 530 tons; speed, 30 knots, with 10,000 I.H.P. One division (twelve boats) is to be laid down in 1907.

Submarines.

The submarine boat, U 1, was launched at the Germania Yard, Kiel, on August 3rd, and was commissioned in December. A yearly grant of 5½ million marks provides for building other experimental boats.

Personnel.

The *personnel* now comprises 1587 executive officers, 295 engineers, 199 officers for the Marine Infantry, Gunnery, Torpedo, and Mining Services, and 234 surgeons—a total of 2315. The warrant officers, petty officers, and men number 44,432. The total *personnel* of the German Navy thus numbers 46,747 officers and men, an increase since last year of 3273.

ITALY.

Statement of the strength of.

The Minister of Marine, Admiral Mirabello, in the discussion of the Naval Estimates of July, 1906, presented a list of the Fleet as completed by the programme of 1905 (given in the *Naval Annual* of 1906), and modified by the various ships struck off the list, as proposed in the Bill presented to Parliament. The Navy is thus divided into two categories:—

(*a*) Battle Fleet, which includes six modern battleships (two Brin type, four V. Emmanuele type); four armoured cruisers (S. Giorgio type); five less modern ships (three Sardinia type, two Filiberto type); five armoured cruisers (three Garibaldi type, two Vettor Pisani type); three scouts, two mining ships; twelve submersibles, with a light cruiser; twenty-eight destroyers; forty-two sea-going torpedo-boats, 210 tons; eight first-class torpedo-boats of 150 tons.

In addition to the above there are to be the following auxiliaries:—One hospital ship, two colliers, fitted with modern appliances for coaling at sea; one repair ship, one distilling ship, and one telegraph ship.

(*b*) Coast Defence Fleet, which includes the battleships of old type, older cruisers, school ships, and second-class torpedo-boats.

The Minister announced that for the battle fleet and for the service of coast defence entrusted to the Navy in time of peace, the non-commissioned ranks of the *personnel* would be gradually increased to 28,000 men, of whom 10,000 volunteers enlisted for long service and 18,000 conscripts.

Programme of construction.

Of the four battleships of the Emmanuele type, one, the Regina Elena, entered on service in the spring of 1906, and two others, the Vittorio Emmanuele and the Napoli, completing in private yards at Genoa, are intended to join the Mediterranean Squadron at the end of the current year. The Roma is to be launched at Spezia on the 21st April.

Armoured cruisers.

Of the four armoured cruisers of the S. Giorgio type, the S. Giorgio will be launched in the spring at Castellamare, the Pisa from Orlando's yard at Leghorn, and the Amalfi from Odero's yard at Genoa, in a sufficiently advanced state to be completed in the spring of 1908. The S. Marco has only recently been laid down at Castellamare. The two colliers, Sterope and Bronte, and the repair ship Vulcan took part in the naval manœuvres of 1906 with satisfactory results. The two light cruisers, transformed into mining ships, are also completed. The idea of constructing a blockade ship of 5000 tons, described in the *Naval Annual* of last year, is for the present abandoned, and of the four destroyers building at Genoa by Ansaldo-Armstrong, three have already been launched and delivered. The fourth, the Lanciere, was launched in March, 1907.

Estimates for 1907-8.

The Estimates for 1907–8 presented to the Chamber of Deputies on the 29th November, 1906, amounted to 140,623,050 lire (£5,624,920), an increase of 1,369,077 lire (£54,763) on the previous estimates. This increase is due in part to the increase of the *personnel* from 26,000 to 26,500, and in part to certain improvements made in allowances and premiums on re-engagements. There is to be an increase from six to seven months of the period during which the Mediterranean Squadron is in full commission, and of three to seven months for the Reserve Division. The second-class torpedo-boats being all assigned—together with the submersibles, which will be ready in the course of the year—to the defence of naval ports, the commander of the torpedo flotilla will have in full commission for six months of the year twenty-six new sea-going torpedo-boats and seven first-class torpedo-boats ready. The commander of the torpedo flotilla will no longer have his headquarters fixed at Civita Vecchia.

New programme.

The Minister of Marine, in his speeches to the Chamber of Deputies, put forward no new programme of construction; he simply announced his intention of laying down at Castellamare, after the launch of the S. Giorgio, a first-class armoured ship of not less than 16,000 tons displacement, armed with one calibre of heavy guns and of very high speed. All the funds available for new construction being allotted to ships already laid down, and the Minister not having asked for an additional vote, no certain details can be given as to the ship referred to. Neither in Government nor private yards have any ships or torpedo-boats been laid down in the year under review.

A commission of naval officers is considering the best type of destroyer and torpedo-boat in the light of experience from the manœuvres of last year. It is probable that the torpedo-boats will be of smaller displacement than 200 tons, that of the torpedo-boats most recently constructed. Eleven destroyers and sixteen torpedo-boats will be ordered as soon as the commission has reported.

JAPAN.

Cost of the war.

Some interesting official statistics of the cost of the war have been published. Of the tables which were given in the *Times*, the first shows that the expenditure on the war was as follows:—

Army	£107,014,082
Navy	19,102,175
	126,116,266

The following table, which shows the naval expenditure in detail up to September, 1906, is given in full.

ITEMS OF NAVAL EXPENDITURES (SECOND ESTIMATES).

Pay and Contingencies	£1,466,839
Departmental Outlays	95,042
Travelling Expenses	102,104
Various Wages and Miscellaneous Outlays	76,698
Allowances	89,336
Provisions	731,202
Clothing	443,046
Manufacturing and Repairing Arms	1,710,004
Docking and Repairing Ships	1,301,177
Sick and Wounded	29,407
Naval Ports and Stations	105,873
Building Ships	4,390,868
Pilotage, &c.	5,341
Structures	347,776
Non-Combatant Ships' Expenses	1,874,904
Secret Service	322,098
Manœuvres	30,000
Purchase of Ships and bringing them out	1,601,132
Establishing Briquette-Manufacturing Station	106,923
Rewards	152,731
Sanitation Outlays	5,629
Restoration of Warships	3,028,482
	£18,016,612

Ships completed.

The battleships Katori, built at Barrow, and Kashima, built at Elswick, have been completed. The time occupied in construction was less than two years and four months. The following particulars of the trials are approximate:—

Name.	Makers of Machinery.	At Four-fifths Power.			Full Power.		
		Speed.	I.H.P.	Coal.	Speed.	I.H.P.	Coal.
		knots.		lbs.	knots.		lbs.
Katori . .	Vickers.	17·8	12,000	1·6	19·5*	18,500	—
Kashima. .	Humphrys Tennant.	18	13,000	1·86	19·242*	17,280	1·82

* Measured Mile.

The ships in general features resemble the King Edward VII. class. Their displacement is about the same. The King Edward VII. carries an armament of four 12-in., four 9·2-in., and ten 6-in. guns. In the Japanese ships 10-in. guns are substituted for the 9·2-in. guns, and twelve 6-in. guns are carried instead of ten. The additional 6-in. guns are mounted amidships on the upper deck behind 4 in. of armour, which gives some protection to the funnel bases. The thickness of the belt armour is the same in both the Japanese and British ships, but the auxiliary armament is protected by 7-in. armour in the British ships, compared with 6-in. armour in the Japanese.

Battle-ships launched.

The first battleship built in Japan, the Satsuma, laid down on May 15th, 1905, was launched on November 15th, 1906, at Yokosuka, where, in 1875, a wooden gunboat, the first modern warship built by the Japanese, was constructed. The progress in all works appertaining to the building of warships has since been most remarkable, and the Japanese are naturally proud of possessing the largest battleship afloat, and of having built her themselves. Displacement, 19,200 tons; length, 482 ft.; beam, 83½ ft.; draught, 27½ ft.; I.H.P., 18,000; speed, 20·5 knots. The armament comprises four 12-in. guns mounted in pairs in barbettes on the centre line; twelve 10-in. guns in pairs in barbettes distributed like those of the Lord Nelson; and twelve 4·7-in. guns mounted in a battery on the main deck beneath the 10-in. guns. The ship will be fitted with reciprocating engines, not turbines, and her boilers will have Myabara tubes. The steel has been supplied from the Government establishment at Kure, and the guns are of Japanese manufacture, the larger guns all being 45 calibres in length.

The Aki, sister ship to the Satsuma, is to be launched at Kure in August, 1907. Both are to be completed in 1908. Provision has been made for laying down two other battleships.

Raising the Mikasa.

The Mikasa, which was sunk at Sasebo in September, 1905, was, after many fruitless efforts, successfully raised in August, 1906.

The Japanese Admiralty announced that the inquiry held into the cause of the disaster showed that the explosion was spontaneous and due to chemical decomposition. The ship is extensively damaged.

Armoured cruisers.

Four armoured cruisers are under construction. Of these, the Tsukuba was launched in 1905, and the Ikoma, at Kure, on April 9th, 1906. Displacement, 13,750 tons; length, 440 ft.; beam, 75 ft.; draught, 26 ft.; I.H.P., 20,500; speed, 21 knots. The armament comprises four 12-in. and twelve 6-in. guns. The complement is 817. The Ibuki and Kurama are about 1000 tons larger than the Tsukuba and will carry eight 8-in. instead of twelve 6-in. guns.

The third-class cruiser Tone is building at Sasebo, and a sister ship is reported to have been laid down in 1906. The following particulars have been published in the *Yacht*:—Displacement, 4035 tons; length, 400 ft.; beam, 48½ ft.; draught, 16¾ ft.; I.H.P., 15,000, speed, 23 knots. The Tone is fitted with reciprocating engines and sixteen Myabara boilers. The armament comprises two 6-in. and twelve 4·7-in. guns. The armoured deck has a maximum thickness on the slopes of 3 ins. Complement, 392.

The Magami and Yodogava, building at Sasebo, are unprotected, and should be classified rather as scouts than as cruisers. The displacement of the Magami is 1329 tons, that of the Yodogava 1230 tons. The former is fitted with Parsons turbines, and has an estimated speed of 23 knots, with 8000 I.H.P. The latter has an estimated speed of 22 knots, with 6500 I.H.P. The armament comprises two 4·7-in. and four 12-pr. guns.

All the early Japanese destroyers were built by Thornycroft and Yarrow. At the commencement of the war with Russia Japan had only 19 destroyers, but since 1902 over 30 have been constructed at Sasebo, Yokosuka, Kobe, Osaka, and Maizuru. Four are in hand at Uraga and one at Osaka. In 1906 there were launched the Hibiki, Hatsuyuki, Yunagi, Shigure, Hatsuharu, Yudachi, Mikadzuki, Nowake, Shiratsuyu, Shirayuki, Matsukase, Shirotaye, and Hayakase.

Refits of Russian ships.

The ships taken from the Russians are being refitted as follows:—The battleships Sagami (ex Peresviet) and Suo (ex Pobieda), and the cruisers Soya (ex Varyag) and Sutsuya (ex Novik), at Yokosuka; the battleship Iwami (ex Orel) at Uraga; the battleship Hizen (ex Retvizan) and the cruiser Tsugaru (ex Pallada) at Sasebo; the battleship Tango (ex Poltava), armoured cruiser Aso (ex Bayan), and coast defence ship Mishima (ex Seniavine), at Maizuru. All the above ships are being fitted with Myabara boilers, and guns of the Armstrong type in use in the Japanese Navy are in some cases being substituted for the original armament. The Sutsuya now carries two 6-in. and four 4·7-in. guns in place of six 4·7-in. guns. The refit of this ship, and of the Iki, Mishima and Aso is practically completed.

New programme.

Various rumours have been published as to the new programme. The future composition of the Japanese Fleet is given in the *United Service Magazine* as twenty battleships, twenty armoured cruisers, eight 22-knot cruisers, eight 25-knot scouts, and 100 destroyers.

Personnel officers.

According to the Navy List there are 1423 naval officers, viz., seven admirals, twenty-three vice-admirals, twenty-six rear-admirals, ninety-nine captains. 146 frigate-captains, 192 corvette-captains, and 930 lieutenants, besides 176 midshipmen and cadets. The average age of admirals is fifty-six years five months, of vice-admirals fifty-two years ten months, of rear-admirals fifty years, and of captains forty-four years three months.

RUSSIA.

An extensive programme of new construction was published in the spring of 1906; but the financial situation has compelled a reduction of the Navy Estimates from £11,000,000 to £10,400,000, and the execution of the programme is not likely to be seriously taken in hand for the present. Particulars of two battleships of 20,000 tons displacement have been published in the *Marine Rundschau* and other Service papers, British and foreign, but have not been confirmed.

Battleships.

The Andrei Pervozvannyi was launched at Galerny Island on October 20th, 1906, and is intended to be completed in 1908. Her sister ship, the Imperator Pavel I., is building at the Baltic Yard. Displacement, 16,630 tons. Speed, 18 knots. Armament, four 12-in. and twelve 8-in. guns. A description of these ships was published in the *Naval Annual* of last year.

Armoured cruisers.

The armoured cruiser Rurik (displacement 15,000 tons) was launched at Barrow on November 17th, 1906. Some particulars were given last year. The armament comprises four 10-in. guns mounted in pairs in barbettes on the centre line, one on the forecastle deck and one on the upper deck aft; eight 8-in. guns, also mounted in pairs in barbettes, of which two are on the forecastle deck and two are on the upper deck abaft the mainmast; and twenty 4·7-in. Q.F. guns, of which sixteen are mounted in a battery amidships on the main deck, protected by 3-in. armour and separated by 3-in. screens, and four, also protected by 3-in. armour, are mounted right aft. For broadside fire, four 10-in., four 8-in. and ten 4·7-in. guns are available; while four 10-in., four 8-in., and four 4·7-in. can be used either ahead or astern. The armour on the barbettes of the

10-in. and 8-in. guns is 8 in. and 7 in. thick. There is a complete water-line belt of Krupp cemented armour 6 in. thick amidships, tapering to 4 in. and 3 in. at the ends, and the side is protected to the height of the boat deck between the fore barbette and mainmast by 3 in. armour. The protective deck is of a special quality of steel alloy. A new feature in the ship is the automatic arrangements which have been introduced to diminish the angle of heel in the event of serious injury to one side of the ship. Torpedo nets have been dispensed with.

Admiral Makaroff.

The armoured cruiser Admiral Makaroff (7900 tons) was launched at Toulon on May 8th, 1906. The Pallada and Bayan, of the same type, are building at St. Petersburg at the new Admiralty Yard, and are to be completed in 1908. The Gromoboi and Rossia are in hand for complete repair and refit.

A large number of destroyers have been built, chiefly by national subscription, several/of them bearing the names of officers who distinguished themselves in the war. The largest are the Kondratenko and three others (625 tons), built at Abo and Helsingfors. A somewhat smaller class (560 tons) comprises four boats launched in 1905-6 at Helsingfors and Riga, and four at the Germania Yard, Kiel. Eight others, still smaller (about 500 tons), have been built by Lange and Son at Riga. Coming to smaller classes, ten of 365 tons have been built by Schichau at Elbing, eight, a little smaller, at St. Petersburg, many of them launched in 1906, and five at Ochta. Four destroyers, built at Toulon and seven at Havre, were referred to last year. The total number of new destroyers is thus fifty-four, and there are about thirty of rather older classes (1900-1903). The submarine flotilla is said to comprise twenty-nine boats, built and building, of which about one half were provided for by national subscription, Field-Marshal Count Sheretmetieff, after whom one boat is named, contributing a large sum.

UNITED STATES.

Battleships completed. Georgia class.

The two remaining battleships of the Georgia class—Georgia and Nebraska (14,948 tons)—have been completed.

Connecticut class trials.

Of the Connecticut class (16,000 tons), the Kansas passed through her trials in December, attaining a speed of 18·096 knots. The Connecticut was commissioned in December, and took part in the winter manœuvres of the Atlantic Fleet. The trials of the Vermont were run on December 7th and 8th in a stiff gale and rough sea. The average speed on the four hours' full-power test was 18·33 knots, and on the twenty-four hours' trial, which was begun immediately on the conclusion of the former, 17·43 knots—the approximate horse-power developed being 14,500. The trials of the Minnesota also took place in rough weather. On the full speed trial the speed of 18·86 knots was attained, and on the twenty-four hours' endurance trial the average speed was 17·95 knots. The Louisiana, whose trials were given last year, attained a speed of 18·82 knots. The contract speed of the Connecticut class was 18 knots. The sixth ship of the class, the New Hampshire, was launched on June 20th, 1906, from the yard of the New York Ship Building Company at Camden, New Jersey. The small battleship Texas has been struck off the list of the Navy.

Armoured cruisers.

The armoured cruiser Montana (displacement 14,500 tons) was launched on December 15th at Newport News. The North Carolina, the sister ship to the Montana, was launched from the same yard on October 6th. The other ships of the class are the Tennessee, launched in 1904, and the Washington, in 1905.

New battle-ships. Michigan and South Carolina.

The battleships Michigan and South Carolina, of which mention was made last year, have been laid down respectively at the yard of the New York Shipbuilding Company and at Messrs. Cramp's yard, Philadelphia. Length, 450 ft.; beam, 80¼ ft.; mean draught, 24½ ft.; displacement, 16,000 tons. The following description of these ships is taken from the *Scientific American* :—

> The two ships when completed will, in appearance, be distinctly different from any of our other battleships. The most noticeable feature, of course, will be the four 12-in. turrets and their guns, mounted in pairs on the axial line of the ship, two forward and two aft of the superstructure. The doubling up in the number of 12-in. turrets, and the placing of them one ahead of the other, has necessarily shortened the length of the superstructure, and crowded the masts, smokestacks, etc., into a shorter space amidships, a fact which is readily noticeable on looking at the engraving of the new ships. In order to save weight the freeboard of the ship has been reduced by the depth of one deck, or about 8 ft., from aft of the superstructure to the stern. Hence the South Carolina and Michigan, while they will have the same freeboard forward as the Connecticut and Louisiana, will have a lower freeboard by about 8 ft. throughout the after third of the vessels' length. The most forward pair of 12-in. guns is carried at about the same height as the 12-in. guns of the Connecticut, or say about 24 ft. above the water-line. Immediately abaft of these is the second pair of forward 12-in. guns, which are so mounted as to fire clear across the roof of the forward turret, the barbette for these guns being increased in height by about 8 ft. in order to give the requisite elevation. The guns have the great command of 32 ft. above the water-line. The after pair of turrets with their four guns are mounted similarly, although at an elevation in each case 8 ft. lower than that of the forward guns.
>
> The shortening of the superstructure has been accompanied also by a moving of the two military masts towards the centre of the vessel, and a distinct novelty is seen in the placing of these masts, not on the longitudinal axis of the ship, but diagonally, the forward mast being moved over to starboard and the mainmast to port. Advantage is taken of this new position to mount the boat cranes on these masts, with, of course, a considerable saving of weight.

ARMOUR AND ARMOUR PROTECTION.

> The armour protection has been exceedingly well worked out, and forms one of the most commendable characteristics of these vessels. Its most important element is a water-line belt 8 ft. in width, and more than 300 ft. in length. The midship portion of the belt varies in thickness from 11 ins. at the top to 9 ins. at the bottom,

while that in the wake of the magazine is 12 ins. thick at the top and 10 ins. at the bottom. The casemate side armour above this water-line belt is nearly 300 ft. long; it will be 8 ins. thick at the top, 10 ins. at the bottom, and will be about 8 ft. 1 in. wide amidships. This is a casemate protection, which, in extent and in thickness, has never been approached in our previous battleships. Triangular athwartship armour, 10 ins. thick, will be fitted at the after end of the belt armour, between the slope of the protective deck and the extension of the flat protective deck. Also an athwartship armour bulkhead, extending entirely across the ship between the upper platform and the protective deck, will be fitted at the forward end of belt. This will be 10 ins. thick throughout. Furthermore, an athwartship casemate armour bulkhead will be fitted between the shell plating and the barbettes between the berth and main decks at forward and after ends of casemates; this will be 8 ins. in thickness throughout.

Barbette Armour.

The forward barbette extends from the protective deck to about 4 ft. above the upper deck, and it varies in thickness from 10 ins. to 8 ins., according as it is flanked by the side armour of the ship. The after forward barbette extends to a height of about 12 ft. above the upper deck, and carries the same general thickness of armour. The forward after barbette extends from the protective deck to 12 ft. above the main deck, and the barbette aft of this extends from the protective deck to 4 ft. above the main deck. In the case of each of the four turrets, the port plate will be 12 ins. in thickness, the rear and side plates 8 ins., and the top plates 2½ ins. in thickness.

The vessels will be propelled by vertical twin-screw four-cylinder triple-expansion engines of 16,000 horse-power. The steam pressure will be 265 pounds in the high-pressure valve chest, and the revolutions per minute will be 125. Steam will be supplied by twelve water-tube boilers fitted with superheaters, carried in three water-tight compartments. The vessels will be lighted throughout by electricity, and the operation of the turrets, ammunition hoists, and, indeed, most of the mechanical work throughout the ship, will be performed by electrical power. The coal bunkers will be arranged with a direct reference to the rapid and efficient supply of coal to the fire rooms, and with especial reference to efficient water-tight subdivision of the vessel. There will be provided for coaling the ships not less than five winches, ten booms, wire spans, with the necessary whips at all the usual chutes and other openings, special provision having been made for the rapid coaling of the vessels. There will be a bridge both forward and aft, built according to the latest practice. The masts will be fitted with searchlight platforms, and arranged for wireless telegraphy. There will be one signal yard on each mast, a battle gaff on the mainmast, and a lookout platform on the foremast.

Distribution of Weight.

It is instructive to study the distribution of weights in these new vessels; the guns, mounts, ammunition, and ordnance stores will represent about 7 per cent. of the trial displacement; the motive power, including engines, boilers, piping, etc., about 10 per cent., and the total armour protection reaches the great figure of more than 25 per cent. of the trial displacement.

Concentration of Fire.

It will be seen at once that by arranging the two extra pairs of 12-in. guns at a sufficient height to enable them to be fired across the roofs of the adjoining turrets, the theoretical all-round concentration of fire is remarkably powerful. Forward, when in pursuit of the enemy, or when fighting in the end-on position, it will be possible to concentrate four 12-in. guns, which is double the number that can be trained in a similar direction on the Connecticut and Louisiana. Aft there is a similar concentration of four 12-in. guns, while on the beam these ships will be able to train eight 12-in. guns.

In a previous issue of the *Scientific American*, we have criticised this method of placing the armament, on the ground that previous experience with the Oregon and her class showed that if heavy guns were fired across the roofs of the adjoining turrets, the work of the gun crews in these turrets would be seriously interfered with. We are informed, however, that particular attention has been given by the Navy Department to this difficulty, and that by virtue of the improved sighting ports and the closely-fitting port shields employed, and other arrangements, it will be possible, in an emergency, to fire any of these 12-in. guns in any position of training without serious interference with the work of the other gun crews. If this should prove to be the case, our Navy Department will be the subject for congratulation on having produced, in proportion to their displacement, by far the most powerful fighting ships built or building in the world to-day; for it must be remembered that these vessels are of but 16,000 tons displacement, while the latest battleship designs of other Governments are of from 18,000 to 19,000 tons displacement.

There are many novel details of construction in these vessels, which, for obvious reasons, it is not expedient to make public at the present time—such, for instance, as the more complete water-tight subdivision of the vessel, and provision against heeling due to damage in action; and the protection of the vessels' longitudinal strength when damaged by gun fire, the provision of adequate longitudinal strength being particularly important in view of the concentration of the weight of the barbettes and heavy guns so near the extremities of the ship.—*Scientific American.*

Battleships of 1906–7 programme.

As regards the new battleships of the 1906–7 programme, the House of Representatives confirmed the amendment of the Senate to the Naval Bill refusing the authorisation for the construction of these ships until after the Secretary to the Navy should have reported full details of the proposed design to the next session of Congress. Ten designs were submitted, four by the Bureau of Construction and six by private firms. The 510 ft. design of the Board of Construction was adopted, and was described as follows in the Secretary's letter:—

A vessel constructed on this design will carry as "heavy armour and as powerful armament as any known vessel of its class," it will have a speed which is believed to be the "highest practicable" for a vessel of this type and class in the present state of knowledge; it will have "the highest practicable radius of action," and can be built within the limit of cost fixed by Congress.

The principal characteristics of the vessel are:—Length on load water line (about) 510 ft.; breadth, extreme at load waterline (about) 85 ft. 3 in.; displacement on trial, not more than 20,000 tons; mean draught to bottom of keel at trial displacement, 27 ft.; total coal bunker capacity (about) 2,300 tons; coal carried on trial, 1000 tons; feed water carried on trial, 66 tons; speed on trial, 21 knots. Armament—Main battery: ten 12-in. breech-loading rifles. Secondary battery: fourteen 5-in. rapid-fire guns; four 3-pounder saluting guns; four 1-pounder semi-automatic guns; two 3-in. field pieces; two machine guns, calibre ·30; two submerged torpedo tubes.

The hull is protected by a waterline belt of armour 8 ft. in width, whose maximum thickness is 11 ins., and whose cross section is uniform throughout the length of the belt. This belt armour gives effective protection to the boilers, machinery and magazine spaces, and, most important of all for vessels of this type whose centres of gravity are necessarily very high, affords, in connection with the casemate armour and extensive compartmental subdivision, a reasonable assurance of the maintenance of the stability of the vessel under battle conditions. The side above the main belt armour is protected by armour 7 ft. 3 ins. wide and a maximum thickness of 10 ins. This armour is likewise of uniform cross section throughout, and, in length, is only slightly less than that of the main waterline belt armour. Above the main casemate armour, amidships, the side is protected by armour 5 ins. in thickness, which affords protection to the smoke pipes, the major portion of the secondary battery of 5-in. guns, and the hull structure. Suitable athwartship and diagonal bulkheads are worked at the extremities of the belt and casemate armour, and a protective deck of suitable thickness is provided throughout the length of the vessel, the arrangement and thickness being as indicated in the specifications and plans.

With particular reference to the offensive qualities of the proposed design, it may be noted that the arrangement of the main battery guns is such as to permit a broadside fire 25 per cent. greater than that of the broadside fire of any battleship now built, or, so far as is known, under construction, and the average elevation of the axes of these guns above the water-line is believed to be greater than that of any known battleship, thus affording a distinct advantage in long-range firing under all conditions of weather.

With respect to the defensive qualities other than those dependent upon armour protection, the arrangement of the interior structure of the vessel is such as to give the maximum degree of protection to all vital portions by means of unusually effective compartmental subdivision, so that, in conjunction with the armour protection already noted, the defensive qualities of this vessel are believed to be distinctly superior to those of any battleship hitherto designed.

> In this connection it may be noted that the percentage of weight allotted to hull and armour is markedly greater than the percentage of such weights allotted to similar purposes in the largest battleship now in existence, and the actual total of such weight is, in the proposed design, approximately 3000 tons greater than in the largest battleship so far built.
>
> The design herewith forwarded provides for a trial speed of 21 knots, and can be arranged for the installation of either reciprocating or turbine machinery, outline specifications for both types of machinery having been prepared. Provision is also made for the storage of a large amount of oil fuel without in any degree reducing the capacity of the coal bunkers.

These two battleships have now been authorised by Congress. The President, in his speech at the December session of Congress, did not ask for an increase of the Navy, but that it might be maintained at its present strength by laying down each year a battleship, equal in size and speed to any that any other nation is building to replace obsolete vessels. Commander Sims's report in favour of the large one-calibre gun ship is given in Part III.

The Secretary proposes an increase of the Navy.

Secretary Bonaparte, who recommended that Congress should authorise two battleships instead of one, writes as follows in his report:—

> In my last annual report I stated that "the aggregate of our battleships, armoured cruisers, and coast defence vessels built, building, or authorised, would seem, according to present indications, sufficient to provide for any contingencies within the limits of probability." When this statement was made the facts seemed to justify an assumption, at least tentatively, that the foreign navies with which it is material to compare our own had, in general, reached the limits of extension immediately contemplated, and there appeared to some persons a fair prospect that some reduction of naval armaments or, at all events, some limitation to their indefinite increase, might result from the contemplated Hague Conference.
>
> Without sharing the last-mentioned expectation, I yet deemed that I could then safely speak as I did; but, without going into detailed explanations which are needless and might be objectionable, it is my duty now to report to you and to the Congress that, in my judgment, circumstances have so far changed as to make provision for a moderate increase in the effective fighting strength of our Navy the part of patriotic foresight at present.

Administration.

The following passage from the Secretary's report on the re-organisation of his Department is quoted at length:—

> It seems to me desirable that a very radical and thorough-going change should be made in the organisation of the Department, and the plan tentatively suggested in my last annual report, with some modifications of consequence, appears to afford a reasonable promise of satisfactory results.
>
> The work of the Department should be grouped into four sections, one under the immediate direction of the Secretary, another under that of the Assistant Secretary, and the remaining two under officers of flag rank. Of the last-mentioned two sections, one should be entrusted with the duties now imposed upon the Bureaus of Yards and Docks, Equipment, Construction and Repair, Steam Engineering, and Ordnance, and the officer at its head should have as assistants the Chief Constructor, the Engineer-in-Chief, and two officers not now designated in the law, for whom I suggest the titles of Master of Ordnance and Master of Public Works, the last-mentioned to be a civil engineer of the Navy. These officers should not be chiefs of bureau, but the deputies and technical advisers, in their respective provinces, of the chief of section, and should discharge such special duties of supervision or otherwise as he might from time to time delegate to each of them. Moreover, they should form a board, under his presidency, which would discharge the duties now imposed by regulation upon the Board on Construction and any other duties which the Department might deem it wise to confide to this board from time to time hereafter.
>
> The other chief of section should be entrusted in the main with the direction of the Navy as an organised and fighting force, his province being thus broader than that of the Chief of the present Bureau of Navigation, and he, also, should have four

assistants, in the Surgeon-General, the Paymaster-General, the Commandant of the Marine Corps, and the Superintendent of the Naval Academy. The duties of these officers would be necessarily more permanently specialised than those of the first-mentioned group, but they should all be the deputies, within their several fields of action, of the chief of section, and, like the other group, should constitute a board, under his presidency, from which the Department might expect advice on all matters affecting the *personnel* of the Navy.

The Secretary should immediately supervise the civil establishment, the Office of Naval Intelligence and the Office of the Judge-Advocate-General, and also the affairs of localities, such as Tutuila and Guam, which are essentially naval stations, but contain an appreciable civil population. There should be likewise attached to his office a master of accounts, who should be a trained accountant.

In addition to the duties now imposed upon the Assistant Secretary by the regulations, he might be required to supervise the work of certain agencies of the Department, which are not necessarily within the province of either of the two section chiefs, such as the Hydrographic Office and the Naval Observatory. It is fully recognised that this arrangement is not strictly logical, but some symmetry of theory must be sacrificed for practical advantages, and it seems clear that if the work of the Navy as a great manufacturing establishment and repair shop is to be consolidated and put under one head (a measure which appears to me highly advisable in the interest of efficiency and economy), the work of the Bureau of Ordnance should go with it. On the other hand, the agency which adjusts pay and provides supplies would fall naturally within the group controlled by the chief of the *personnel* section.

I respectfully suggest that a suitable commission, consisting of three or more ex-Secretaries of the Navy and two or more members of the Committee on Naval Affairs of each of the two Houses of the Congress, under the presidency of the Secretary of the Navy for the time being, be appointed to consider this plan and also any other suggestions on the same subject matter, and to report at the first session of the Sixtieth Congress.

Naval Reserve.

The Secretary puts in a strong plea for the establishment of a Naval Reserve. He says:—

The assurance that 20,000 thoroughly competent seamen could be secured at any moment for our Fleet would be very well worth $5,000,000 a year; indeed, as a mere matter of economy this would be a good investment, since it might obviate the necessity of maintaining a large number of ships in commission in time of peace, so as to be assured of having them ready in time of war. I suggest, therefore, for your consideration and that of the Congress, the propriety of allowing every able-bodied man of good moral character, within certain limits of age, who has served at least four years in the Navy and been discharged with credit, to be enrolled on a reserve list, in return for which he should receive from $15 to $25 per month, according to his rating at the time of leaving the Service. Enlistments in the reserve should be for four years, and consecutive re-enlistments should not be permitted unless under very exceptional circumstances. I would limit the number in the reserve to, say, 20,000 men. If the organisation of this force were combined with a provision for subsidies to vessels having an American registry and suitable for naval use in the event of war, by requiring that a certain proportion of their crews should be made up of men in the naval reserve, it would undoubtedly be more certainly effective; but even without any such provision I believe a reserve of experienced men could thus be obtained who not only would be nearly or quite as serviceable, when called upon for duty, as the active *personnel*, but also immensely increase the efficiency and consequent utility to the Service of the remaining members of the Naval Militia.

Gunnery.

The following are the results of the target practice of 1906—the points obtained by each ship being given.

VESSELS COMPETING FOR THE BATTLESHIP TROPHY.

1.	Wisconsin	137·925
2.	Missouri	128·830
3.	Kearsarge	125·791
4.	Kentucky	123·060
5.	Colorado	113·155
6.	Maryland	112·490
7.	Indiana	112·358
8.	Illinois	110·960
9.	Alabama	110·234
10.	Ohio	106·049
11.	Pennsylvania	105·448
12.	Texas	90·537
13.	West Virginia	87·903
14.	Maine	83·515
15.	Iowa	41·514

VESSELS COMPETING FOR THE CRUISER TROPHY.

1. Baltimore	141·102	4. Boston	84·580
2. Chicago	114·970	5. Cincinnati	76·063
3. Raleigh	103·897	6. Marblehead	72·773

The Navy Estimates for 1907–8, as reported to the House by the Naval Committee, amount to £19,787,429, having been reduced from £23,719,600, as proposed by the Naval Department. The number of men authorised is 36,000.

MINOR NAVIES.

AUSTRIA-HUNGARY.

The Navy Estimates for 1907 amount to £1,891,666, being an increase of £604,274 over 1906.

The Chief of the Navy, Admiral Montecuccoli, proposes the construction of three battleships of 14,500 tons, and 20 knots speed, with an armament of four 12-in., eight 9·4-in., and twenty 4·1-in. guns, to replace the Tegethoff, Kronprinz Rudolf, and Kronprinzessin Stephanie, which have been struck off the list of the Fleet.

The battleships Erzherzog Friedrich and Erzherzog Karl (10,433 tons) have been completed.

Of five destroyers of the Huszar class, named the Scharfschütze, Streiter, Ulan, Uskoke and Wildfang, laid down at Trieste, the Ulan and Streiter have been completed. Six are to be put in hand in 1907.

Two submarine-boats of the Holland type have been laid down at Barrow.

ARGENTINE REPUBLIC.

The *Times* reports that the Argentine Government propose to expend £5,900,000 on the purchase of three armoured vessels, nine destroyers and twenty-one torpedo boats.

BRAZIL.

Of the three battleships of the Swiftsure type and three first-class cruisers, which were projected, one battleship has been laid down at Barrow and one at Elswick.

CHINA.

The gunboat Tchu Tai has been launched at Kobe. Displacement, 552 tons. Speed, 13 knots. Armament, two 4·7-in. guns and two 12-prs.

GREECE.

Three destroyers of 31 knots speed—the Storm, Thyella, and Naphkratoussa—have been launched from Messrs. Yarrow's yard at Poplar, where another is building, and the Nike from the Vulcan Yard, Stettin, where the Doxa and two others are in hand.

NETHERLANDS.

The Navy Estimates for 1907 amount to £1,769,197. A new programme is reported to be under consideration which includes four small battleships of 7000 tons.

PERU.

The protected cruiser Almirante Grau (3200 tons) attained a speed of 24·64 knots on her full-power trials. The coal consumption at cruising speeds was 1·65 lbs. per I.H.P. per hour. The trials, which lasted over a week, showed that the cruiser could steam at 22 knots with only eight of her ten water-tube boilers in use as long as her coal lasted. Her sister ship, the Coronel Bolognesi, also built at Barrow, which was launched on September 24th, attained practically the same speed, viz., 24·62 knots on her trials. These cruisers are modified scouts, and have been constructed with limited draught so as to enable them to enter all the harbours in Peru.

ROUMANIA.

Four torpedo-vedette boats built at the Thames Ironworks passed across the continent by the Rhine, the Ludwig Canal and the Danube, and four others are to follow.

SPAIN.

The Minister of Marine announces that three coast-defence ships are to be built.

SWEDEN.

Two destroyers and six torpedo boats are to be laid down.

TURKEY.

The Assar-i-Tewfik, built at La Seyne in 1868, has been reconstructed at the Germania Yard, Kiel, and has arrived at Constantinople. Four 28-knot destroyers and four 26-knot torpedo boats have been ordered in France. Two torpedo cruisers of 775 tons were launched at the Germania Yard, Kiel, in 1906.

T. A. BRASSEY.

JOHN LEYLAND.

CHAPTER III.'

COMPARATIVE STRENGTH.

Changes in relative strength.

THE most important change in the relative strength of navies in the year under review is the fact that the United States has now become the second Naval Power in the world. While two first-class battleships have, as usual, been completed during the year for the German Navy, no less than seven first-class battleships (viz., two of the Georgia class and five of the Connecticut class) have been completed for the United States Navy. The United States, has, therefore, twenty-two battleships completed as against twenty first-class battleships completed for Germany. In armoured cruisers, the United States possesses a considerable superiority over Germany, both in numbers and individual strength. For the French Navy have been completed the Patrie and the République; for the Japanese Navy, the Kashima and the Katori. Most of the ships taken by the Japanese from the Russians are being refitted, while the Mikasa has been raised. Unless the French bestir themselves the Japanese Navy will, ere long, be superior to that of France. The French Navy is suffering from the enormous delay in carrying to completion the ships that have been laid down. The République and the Patrie, completed in 1907, were launched in 1902 and 1903 respectively. Too large a proportion of the sum available for new construction in France has been diverted to the construction of submarines and torpedo-boats. Happily for the French people a sounder view as to the policy of new construction appears at last to have prevailed, and M. Thomson, the Minister of Marine, had little difficulty in carrying in Parliament his proposals for the laying down of six powerful battleships. The Italian Navy remains in a stagnant condition. The delays in the progress of construction are as great as in France. For the British Navy four battleships have been completed, and one, the Montagu, lost. The secrecy with which the Dreadnought's design was invested had probably little to do with the postponement of new construction abroad.

Ships in commission. Britain.

The list of ships in commission in European waters for the British, French and German Navies is given in the usual table. Further very important changes have taken place in the organisation and distribution of the British naval force. The scope of these is described in the memorandum issued by the Admiralty, which is printed in full.

"The Board of Admiralty have decided on the following alterations in the distribution of naval strength:—

"I. A distinct fleet will be constituted from the ships in commission in reserve, to be called the 'Home Fleet,' under the supreme command of a flag officer with the *status* of Commander-in-Chief and headquarters at Sheerness, but his functions will not interfere with those of the existing Commander-in-Chief at the Nore. This fleet will be in every respect organised with a view to enhancing its value as a fighting force, and battle practice and other fleet exercises not at present carried out by the Reserve divisions will be introduced. The primary object aimed at will be sea-going efficiency, and for this purpose the cruises of the Home Fleet will be made as frequent as practicable.

"II. A sliding scale will be adopted in the strength of nucleus crews, so that the vessels first required in war will have the largest complements; whilst the vessels in 'special reserve,' instead of having no crews, as at present, will have adequate complements of officers and men to keep the propelling machinery and armament efficient. The vessels now in special reserve will be gradually replaced by other ships as they cease to be effective units of the Home Fleet. The Board of Admiralty will determine the nature of this sliding scale of nucleus crews from time to time.

"III. The distribution of ships between the present Channel. Mediterranean, Atlantic and Reserve Fleets will be altered, in order to permit of the strengthening of nucleus crews and the organisation of a Home Fleet as above described. No ships will be paid off, no men will be sent to the barracks or to the instructional schools, and no alteration will be made in the proportion of officers and men serving afloat.

"IV. The Board of Admiralty have also decided that, where it will conduce to the fighting efficiency and convenience of the Service, there will be an interchange of vessels between the Home Fleet, on the one hand, and the Channel, Atlantic and Mediterranean Fleets on the other. For instance, any vessel in the three last-named fleets requiring an extensive refit will be replaced temporarily by a ship of the Home Fleet.

"V. The cruisers of the Home Fleet will from time to time be combined for instructional and tactical exercises with the cruiser squadrons of the other fleets, and the Atlantic and Mediterranean Fleets will be combined as usual for the same purpose.

"The Board of Admiralty are satisfied that the constitution of a

NORE

	GREAT BRITAIN.				GERMANY.	FRANCE.		
							Mediterranean.*	
Class.	Home Fleet. 6	Channel Fleet.	Atlantic Fleet.	Mediterranean.	Active Battle Fleet.	Northern Squadron.	Active Squadron.	Reserve.‡
Battleships	Dreadnought Bulwark London Magnificent Majestic Victorious	Edward VII. Africa Britannia Commonwealth Dominion Hibernia Hindustan New Zealand Illustrious Jupiter Ocean Vengeance Swiftsure Triumph	Exmouth Albemarle Cornwallis Duncan Russell Albion	Queen Formidable Implacable Irresistible Prince of Wales Venerable	1st Squadron. Wittelsbach Zähringen Wettin Mecklenburg K. Karl der Grosse K. Wilhelm II. K. Wilhelm der Grosse K. Friedrich III. 2nd Squadron. Preussen Hessen Elsass Braunschweig Lothringen Deutschland Pommern Hannover	(In Reserve) Henri IV. Bouvines Tréhouart	Suffren Gaulois St. Louis Iéna † Patrie République	Bouvet Charlemagne Carnot Charles Martel Jauréguiberry Massena
Cruisers, 1st Class	6 5th Squadron. Leviathan Cochrane Duke of Edinburgh Achilles Natal Warrior	1st Squadron. Good Hope Argyll Hampshire Roxburgh	2nd Squadron. Drake Black Prince Antrim Devonshire	3rd Squadron. Bacchante Aboukir Lancaster Suffolk	Friedrich Karl Roon York	Montcalm Gueydon Dupetit-Thouars Gloire Amiral Aube Jeaune d'Arc	Léon Gambetta Jules Ferry Victor Hugo	Marseillaise Condé
Cruisers, 2nd Class		Talbot Juno	Arrogant	Diana Minerva Venus	..	..	..	..
Cruisers, 3rd Class	Sapphire 4 Scouts	Topaze	Amethyst Diamond	Barham	Arcona Frauenlob Hamburg Berlin Königsberg Lübeck	Forbin	Du Chayla Lalande	Galilée
Destroyers	48	..	...	12	..	7	11	..

* Ernest Renan to be added when completed. † Damaged by explosion. ‡ Three of these ships *en disponibilité armée*.

Home Fleet will increase the immediate striking strength of the Navy, and that the more active training which the nucleus crews will receive under the new system will add to the sea experience of the Fleet as a whole.

"These changes will be gradually carried out in such a way as to obviate any dislocation of the various fleets and squadrons."

Reorganisation of British fleets.

The most important feature of the scheme is the proposed constitution of a Home Fleet, under a commander-in-chief, with headquarters at Sheerness, a not very suitable place. The Home Fleet will include six battleships with the Dreadnought as Flagship. The present Channel Fleet, which will have its base at Berehaven, is reduced in numbers from sixteen to fourteen battleships, but it includes eight of the most recently completed battleships of the Edward VII. class, which have previously served in the Atlantic Fleet. The Atlantic Fleet will be reduced from eight to six ships, namely, five of the Duncan class and the Albion. The Mediterranean Fleet is also reduced from eight to six ships. The First and Second Cruiser Squadrons are each reduced from six to four ships. The Third Cruiser Squadron (Mediterranean) will still consist of four ships. The Fourth Cruiser Squadron (North America and West Indies) now comprises three armoured cruisers (in place of four Edgar class) and two protected cruisers.

Germany.

The German Active Squadron has been strengthened by the addition of the Kaiser Wilhelm II., making sixteen battleships instead of fifteen, and the substitution of the Lothringen, Deutschland, and other new ships completed for the Brandenburg class. Three armoured cruisers are attached to this Squadron instead of two. Two of the Brandenburg class and the ships of the Hagen class are in reserve.

France.

In the *Naval Annual* of 1906 (pp. 42–3) the necessity for the concentration of French battleship strength, either in the Mediterranean or the Channel, was discussed at some length. During the year there has been a complete revolution in the distribution of the French Naval force, and we again have the position of ten years ago, when French battleship strength was concentrated in the Mediterranean and the Northern Squadron was a negligible quantity. All the newest French battleships have been transferred to the Mediterranean, where there will be an active squadron of six battleships, and the same number of battleships in reserve, the list of which is given in the table. The Active Squadron will be in commission the whole year. Of the Reserve Squadron three battleships and the armoured cruisers will be in commission the whole year with nucleus crews, and three battleships will be *en disponibilité armée.*

The Northern Squadron is to consist of armoured cruisers alone, with the Henry IV. and two coast defence ships in reserve. An armoured cruiser and two third-class cruisers are in commission in the Naval Division of the Atlantic.

In the following table is given the number of battleships in commission in European waters for the British, German and French Navies, for the years 1894, 1899, 1903, 1906 and 1907.

Year.	GREAT BRITAIN.					GERMANY.		FRANCE.			
	Channel.	Atlantic.	Mediterranean.	Home.	Total.	Battle Fleet.	Reserve.	Northern Squadron.	Mediterranean. Active.	Mediterranean. Reserve.	Total.
1894	3	4	10	—	17	—	—	6	8	6	20
1899	10	8	11	—	29	7	—	6	6	9	21
1903	10	6	14	—	30	8	—	5	6	3	14
1906	16	8	8	13	45	15	8†	6	6	3	15
1907	14	6	6	13*	39	16	10†	3‡	6§	6	15

* Six in full commission. † Eight coast-defence ships. ‡ In reserve.
§ The Iéna, though seriously damaged, will presumably be repaired.

The number of British battleships in full commission remains at thirty-two, all of the first-class, while there are to be seven battleships in partial commission in the Home Fleet. In the light of the figures in the above table, a reduction in the number of ships in full commission appears at the moment permissible. The policy of maintaining a large proportion of our Fleet on a war footing ensures crews being at all times fully trained, but it is an expensive policy which should never be continued at the sacrifice of the Shipbuilding Vote. Though considerable economies (as set forth in Appendix B of Lord Cawdor's Memorandum of December, 1905) have been made in the maintenance of ships in commission, it is in the Shipbuilding Vote that the reductions in the Navy Estimates during the past two years have mainly been effected. The strength now proposed for the Channel Fleet, together with the ships in full or partial commission of the Home Fleet, is amply sufficient to deal with Germany.

The Mediterranean.

In one respect the new distribution appears open to serious criticism. In the review of the comparative strength in the past few years, we have more than once pointed out in these pages the excessive strength of the Mediterranean Squadron having regard to the distribution of the naval forces of our possible enemies. In 1903 the British Mediterranean Fleet consisted of fourteen battleships, a number far in excess of the force which France had at that time in commission in the Mediterranean. (Compare *Naval Annual* 1903, p. 61.) The distribution of the naval force of France has, as pointed out above, been completely changed in the past year. France, it is true, is now our friend, and it is earnestly hoped will long remain so. But the moment when there has been a large transference of naval force from the Northern waters of Europe to the Mediterranean is hardly one for a reduction in the strength of the British Mediterranean Fleet. This Fleet, as at present composed, will not be strong enough to hold its own without question in any eventuality. The Russian Black Sea Fleet was not affected by the Russo-Japanese war. Though the Atlantic Fleet may be looked upon as the Reserve of the British Mediterranean Fleet, it is questionable whether the latter should not be strengthened by two ships. The Mediterranean was looked upon as our best training ground. From this point of view also it is desirable to have eight battleships in the Fleet.

United States Atlantic Fleet.

The United States have now in commission a Fleet as powerful as that of Germany. The Atlantic Fleet is organised in four squadrons and eight divisions, besides two torpedo flotillas. In 1907 these squadrons will be made up as follows:—First Squadron: Battleships: Connecticut, Louisiana, Maine, Missouri, Georgia, New Jersey, Rhode Island, and Virginia. Second Squadron:—Battleships: Alabama, Illinois, Kearsarge, Kentucky, Ohio, Indiana, Iowa, and Minnesota (when completed). The Third Squadron will consist of the armoured cruisers Tennessee, Washington, St. Louis, and another when completed, and of four protected cruisers. The Fourth Squadron comprises a miscellaneous collection of cruisers and two torpedo flotillas, which will be held in reserve when their services are not required. It is the intention to maintain the Atlantic Fleet at a strength of sixteen battleships, replacing the older ships with new ships as completed. We may be well up to the two-Power standard as far as European Navies are concerned, but against a combination of Germany and the United States we should have a difficulty in holding our own to-day, and that difficulty is not likely to decrease in the future.

Eastern waters.

In Eastern waters the British China, East Indies and Australian Squadrons remain of about the same strength as last year. A second-class cruiser replaces one of the third-class on the East Indies station. A third-class cruiser has been added to the Australian Squadron.

The French Squadrons in Eastern waters, though nominally of the same strength, have, in fact, been reduced by the substitution of the old cruisers Bruix and Chanzy for the more modern armoured cruisers which have been withdrawn.

The United States Squadrons in the Pacific Ocean have now been re-organised in six divisions, under the title of the Pacific Fleet, instead of being divided as before into two fleets, the Pacific and the Asiatic Fleet. The two divisions of the first squadron are given in the table below. Four first-class armoured cruisers have been substituted for the battleships Ohio, Oregon, and Wisconsin. The second squadron comprises:—third division, the first-class cruisers Charleston, Milwaukee, and St. Louis, third-class cruiser Chicago; fourth division, third-class cruisers Cincinnati, Raleigh, Albany, and New Orleans. The third squadron includes the coast-defence ships Monterey and Monadnock and a number of gun vessels in the Philippines.

The relative strength of squadrons in Eastern waters will best be seen from the following table:—

	Britain.	*Germany.*	*France.*	*United States.*
CRUISERS (1st Class)	King Alfred.	Fürst Bismarck.		West Virginia.
	Bedford.			Colorado.
	Monmouth.			Maryland.
	Kent.			Pennsylvania.
	Powerful (A.)			
CRUISERS (2nd Class)	Hyacinth (E.I.)		D'Entrecasteaux.	
	Highflyer (E.I.)			
	Challenger (A.)		Bruix.	
	Encounter (A.)		Chanzy.	
CRUISERS (3rd Class)	Flora.	Niobe.		Chattanooga.
	Astraea	Leipzig.	Alger.	Galveston and two others.
	Perseus (E.I.)		Catinat (P.)	
	Proserpine (E.I.)		Descartes (E.I.)	
	Cambrian (A.)			
	Pegasus (A.)			
	Pioneer (A.)			
	Prometheus (A.)			
	Pyramus (A.)			
	Psyche (A.)			

A. = Australia. E.I. = East Indies. P. = Pacific.

Other stations.

On the Cape of Good Hope station the Squadron has been further reduced to one second-class and two third-class cruisers. On the west coast of North America there is permanently stationed one sloop. The Cambrian and Flora cruised on the west coast of America and in the Pacific Islands during 1906.

Concentration carried too far.

In reviewing the squadrons we now keep in commission on extra-European waters, it is well to consider whether the policy of concentration has not, in certain cases, been carried beyond the limits of safety for the widespread interests and commerce of the British Empire. Having regard to the withdrawal of white troops from the West Indies (in spite of the protests of the inhabitants), it is regrettable that United States warships should have been the first to reach Kingston after the earthquake, and that it was United States and not British sailors and marines who were landed. Again, though we have frequently urged in these pages the withdrawal of the numerous useless sloops and gunboats which we used to maintain in commission on foreign stations, we cannot afford to leave our commerce in any quarter of the globe at the mercy of any small cruiser or armed merchantman. The Shearwater does not adequately protect British interests on the west coast of North America.

Comparative tables.

As was pointed out last year in the reclassification of ships given in the comparative tables, the Dreadnought and other new ships recently completed, or under construction for our own and foreign navies, are superior in fighting power to many of the ships hitherto included in the list of first-class battleships. A line of demarcation could perhaps best be drawn between the Edward VII. class and battleships of earlier date, although from some points of view it might be preferable to draw the line between the Edward VII. class and the Agamemnon. In either case the distinction between a first- and second-class battleship would be somewhat arbitrary, and would rest on no clear principle. The first quality to be looked for in a battleship, as in most other ships of war, is offensive power, the second protection, and the third speed. In a cruiser speed stands before protection. If the Dreadnought has rendered all battleships laid down before the close of 1906 out of date, she herself may shortly be rendered out of date by the new United States and German battleships. The Dreadnought is faster than any battleship built or building*, except the Italian Regina Elena class, which have an estimated speed of 22 knots. Whether an armament consisting exclusively of 12-in. guns, or whether an armament which comprises a certain proportion of 10-in. or smaller calibre guns is the better is a question yet undecided.

Difficulties of classification.

In order to show the difficulty of drawing a distinction between battleships of the first and second class, we give a list (p. 47) of the most powerful battleships recently completed or under construction.

For the reasons given above no attempt has been made to divide the ships hitherto classified as first-class battleships. There seems, moreover, no good reason for maintaining the distinction between the second and third classes as hitherto given in the tables. Several ships in both classes have been struck out and many more will follow next year. The Barfleur and Centurion, with their present secondary armament of ten 6-in. guns in casemates, are equal, if not superior, to the German Brandenburgs and French Charlemagne class, and have, therefore, been transferred to the first-class.

---

* It is said that the new Dreadnoughts will have less speed.

BATTLESHIPS COMPLETED.

COUNTRY.	NAME.	DISPACEMENT.	ARMAMENT.	SPEED.	DATE OF COMPLETION.
GREAT BRITAIN	Queen	15,000	4 12-in., 12 6-in.	18	1904
	Edward VII.	16,630	4 12-in., 4 9·2-in., 10 6-in.	18½	1905–6
	Dreadnought	17,900	10 12-in.	21	1906
UNITED STATES	Georgia	14,948	4 12-in., 8 8-in., 12 6-in.	19	1906
	Connecticut	16,000	4 12-in., 8 8-in., 12 7-in.	18½	1906
FRANCE	Patrie	14,635	4 12-in., 18 6·4-in.	18	1907
GERMANY	Braunschweig	12,997	4 11-in., 14 6·7-in.	18	1904–6
	Deutschland	13,200	4 11-in., 14 6·7-in.	18	1906
JAPAN	Katori	15,950	4 12-in., 4 10-in., 12 6-in.	20	1906
		BUILDING.			
BRITAIN	Agamemnon (2)	16,500	4 12-in., 10 9·2-in.	18	...
	Dreadnought (3)	18,600	10 12-in.	20 (?)	1908–9
UNITED STATES	Michigan (2)	15,000	10 12-in.	21	...
FRANCE	Mirabeau (6)	17,710	4 12-in., 12 9·4-in.	19	...
GERMANY	Bayern (2)	18,000	...	19½	...
JAPAN	Satsuma (2)	19,200	4 12-in., 12 10-in.	19	...
RUSSIA	Pavel I. (2)	16,630	4 12-in., 12 8-in.	18	...

Present position.

The present position, as regards first-class battleships, is shown in the following table:—

	Great Britain.	United States.	Germany.	France.	Japan.	Russia.	Italy.
Built	50	22	20	13	11	4	4
Building	5	5	6	10	2	4	4
Total	55	27	26	23	13	8	8

A study of these figures confirms the conclusion that the agitation raised against the Admiralty for dropping one ship out of the programme of new construction was unjustified. In battleships of the first class we have fifty ships completed, as against twenty-two for the United States and twenty for Germany, and we are superior at the moment to a combination of any three European Powers. For the current year some reduction in the expenditure on new construction was permissible.

Future position.

We have at the present time five battleships and three Invincibles under construction, as compared with five battleships for the United States, six for Germany, ten for France, and two for Japan. Germany has a larger number of ships under construction than we have, and France has twice the number. In the United States the period of naval expansion appears to have come to an end and only two ships are being laid down. The outlook for the future is not so bad as would appear from the above figures, as the rate of construction is greater in this country than abroad. The Dreadnought has been built in less than a year and a half. The normal period of construction for battleships is laid down by the Admiralty as two years. In Germany it averages three years,* and in the United States it may be taken as between three and four years. In France the Patrie class will have been from six to eight years under construction by the time they are completed; but it is probable that there will be an improvement in this respect with the new ships now being laid down.

Sir William White's estimate.

In his interesting articles in the *Times* on British and Foreign warship-building capability Sir William White estimates that of the new ships of the Dreadnought type now being laid down, or to be laid down next year, the British Navy will, early in 1909, possess six, in addition to three Invincibles, while none will by that date be completed for any Foreign Navy. Before the end of 1909 two battleships and one large cruiser may be completed for Germany, and two battleships for the United States. At the end of 1910, if only two battleships are laid down for the British Navy per annum, we shall possess eight battleships of the latest type. Germany will have four battleships and two cruisers, France two battleships, and the United States two, or possibly three, battleships.

Position 1908-10.

The table on opposite page gives an estimate of the relative strength in first-class battleships at the end of 1908 and following years, and shows how the figures are arrived at.

It is estimated that the Royal Sovereign class, the Renown and two Centurions will have dropped from the British first-class list by the end of 1908. If the table is to represent fairly the position of the British Navy, the German Brandenburg class, the United States Indiana class, the French Charlemagne class and Brennus, and the Japanese Tango (ex Poltava) must be dropped from the foreign lists, and even then ships are included as first-class for foreign navies, *e.g.*, the Kaiser class, the Iowa, the Carnot, the Suo, and the Fuji, which are hardly more powerful than the Royal Sovereigns. The table, however, shows that our present predominant position as regards battleships will soon be lost, and that at the end of 1908 we shall be barely up to the two-Power standard. Next year the vote for New Construction must be increased.

Armoured cruisers.

Of first-class cruisers we have forty-two completed (including the Warrior), as compared with six for Germany, eleven for France, and eleven for the United States. We have six ships under construction, Germany has three, France four, and the United States four. No

---

* This may be reduced to two and a half years.

	BRITAIN.	GERMANY.	UNITED STATES.	FRANCE.	JAPAN.
1908 (end)	Majestic 9	Kaiser 5	Iowa 1	Carnot 3	Fuji 1
	Canopus 6	Wettin 5	Kearsarge 2	Massena 1	Asahi 3
	Formidable 6	Braunschweig 5	Alabama 3	Bouvet 1	Hizen 2
	Duncan 5	Deutschland 5	Maine 3	Iéna 1	Suo 2
	Queen 2		Georgia 5	Suffren 1	
	Swiftsure 2		Idaho 2	Patrie 6	
	*		*	*	
	Edward VII. 8		Connecticut 6		Katori 2
	Agamemnon 2				Satsuma 1
	Dreadnought 3				
Total (1908)	43	20	22	13	11
1909 (to be completed)	Dreadnought 3	Bayern 2			Aki 1
Total (1909)	46	22	22	13	12
1910 (to be completed)	Dreadnought 2	Bayern 2	Michigan 2	Danton 2	2
Total (1910)	48	24	24	15	14

* A possible line of demarcation between the first and second class.

armoured cruisers are included in the programme of construction for the French or United States Navies. The Invincible class, of which we are building three, in size, cost and offensive power should be more properly classified as battleships.

Second- and third-class cruisers.

No second-class cruisers are under construction for any navy. Germany, the United States and Japan are all building third-class cruisers, while one small cruiser is to be laid down for the British Navy. For the protection of the commerce and interests of the Empire, more especially on extra-European stations, medium-sized cruisers to replace the vessels which are being rapidly removed from the Navy List appear to be urgently required. Invincibles are obviously unsuited for this purpose. They cannot be built in sufficient numbers, and it is a waste of power to employ an Invincible against cruisers less perhaps than one-fifth of her size. The main objection urged against the building of medium-sized cruisers is that they are liable to capture by an Invincible. That a medium sized cruiser could not fight an Invincible is obvious, but the chance of meeting an Invincible is small.

T. A. BRASSEY.

Comparative Tables of British, German, United States, French, Japanese, Russian, and Italian Ships.

TABLE I.—FIRST-CLASS BATTLESHIPS.

GREAT BRITAIN.		
Launched.	Name.	Displacement.
		tons.
1906	Dreadnought	17,900
	Bellerophon	18,600
	Temeraire	
	Superb	
1906	*Lord Nelson*	16,500
1906	*Agamemnon*	
1903	Edward VII.	16,350
1903	Commonwealth	
1903	Dominion	
1903	Hindustan	
1904	New Zealand	
1905	Africa	
1904	Britannia	
1905	Hibernia	
1903	Swiftsure	11,800
1903	Triumph	
1902	Queen	15,000
1902	Prince of Wales	
1901	Albemarle	14,000
1901	Cornwallis	
1901	Duncan	
1901	Exmouth	
1901	Russell	
1898	Formidable	15,000
1898	Irresistible	
1899	Implacable	
1899	London	
1899	Venerable	
1899	Bulwark	
1897	Canopus	12,950
1899	Glory	
1898	Albion	
1898	Goliath	
1898	Ocean	
1899	Vengeance	
1894	Magnificent	14,900
1895	Majestic	
1895	Prince George	
1895	Victorious	
1896	Cæsar	
1896	Hannibal	
1896	Illustrious	
1895	Jupiter	
1896	Mars	
1895	Renown	12,350
1891–92	Royal Sovereign class (8 ships)	14,150
1893	Barfleur	10,500
1892	Centurion	
	55 ships.	809,450

GERMANY.		
Launched.	Name.	Displacement.
		tons.
	Ersatz Bayern	18,000
	Ersatz Sachsen	
1904	Deutschland	13,200
1905	*Hannover*	
1905	*Pommern*	
1906	*Schlesien*	
1906	*Schleswig-Holstein*	
1902	Braunschweig	12,997
1903	Elsass	
1903	Hessen	
1903	Preussen	
1904	Lothringen	
1900	Wittelsbach	11,643
1901	Wettin	
1901	Zähringen	
1901	Mecklenburg	
1901	Schwaben	
1896	Kaiser Friedrich III.	10,974
1897	Kaiser Wilhelm II	
1899	Kaiser Wilhelm der Grosse	
1900	Kaiser Barbarossa	
1899	Kaiser Karl der Grosse	
1891	Brandenburg	9,874
1891	Kurfürst Friedrich Wilhelm	
1891	Weissenburg	
1892	Wörth	
	26 ships.	319,566

UNITED STATES.		
Launched.	Name.	Displacement.
		tons.
	Michigan	16,000
	South Carolina	
1905	*Idaho*	13,000
1905	*Mississippi*	
1904	Connecticut	16,000
1905	Kansas	
1904	Louisiana	
1906	Minnesota	
1906	*New Hampshire*	
1905	Vermont	
904	Georgia	14,948
1904	Nebraska	
1904	New Jersey	
1904	Rhode Island	
1904	Virginia	
1901	Ohio	12,440
1901	Maine	12,300
1901	Missouri	
1898	Wisconsin	11,653
1898	Alabama	11,565
1898	Illinois	
1898	Kearsarge	11,540
1898	Kentucky	
1896	Iowa	11,340
1893	Indiana	10,288
1893	Massachusetts	
1893	Oregon	
	27 ships.†	365,047

FRANCE.		
Launched.	Name.	Displacement.
		tons.
	Danton	17,710
	Condorcet	
	Diderot	
	Mirabeau	
	Vergniaud	
	Voltaire	
1903	Patrie	14,635
1902	Republique	
1905	*Liberte*	
1904	*Justice*	
1905	*Verite*	
1904	*Démocratie*	
1899	Suffren	12,527
1898	Iéna	11,861
1896	St. Louis	11,090
1896	Gaulois	11,105
1895	Charlemagne	11,108
1896	Bouvet	12,007
1895	Masséna	11,735
1893	Jauréguiberry	11,637
1893	Charles Martel	11,693
1894	Carnot	11,954
1891	Brennus	11,190
	23 ships.	321,977

JAPAN.		
Launched.	Name.	Displacement.
		tons.
	Aki	19,200
1906	*Satsuma*	
1905	Kashima	16,400
1905	Katori	15,950
1902	Iwami	13,516
1900	Hizen	12,700
1899	Asahi	15,200
1900	Mikasa	15,200
1898	Shikishima	14,850
1898	Sagami	12,674
1900	Suo	
1896	Fuji	12,320
1894	Tango	10,960
	13 ships.	190,844

RUSSIA.		
Launched.	Name.	Displacement.
		tons.
1906	*Ioann Zlatoust*	12,733
	Evstafi	
	Imperator Pavel I.	16,630
1906	*Andrei Pervozvannyi*	
1903	Slava	13,516
1901	Cesarevitch	12,912
1900	Panteleimon	
1893	Tria Sviatitelia	12,480
		13,318
	8 ships.	110,952

ITALY.		
Launched.	Name.	Displacement.
		tons.
1904	Regina Elena	12,425
1904	*Emanuele III.*	
	Roma	
1905	*Napoli*	
1901	Ra Margherita	13,214
1901	Benedetto Brin	
1897	E. Filiberto	9,615
1897	Saint Bon	
	8 ships.	95,418

† Two projected.

TABLE II.—SECOND-CLASS BATTLESHIPS AND COAST DEFENCE SHIPS.

GREAT BRITAIN.			UNITED STATES.			GERMANY.			FRANCE.			JAPAN.			RUSSIA.			ITALY.		
Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.	Launched.	Name.	Displacement.
		tons.			tons.			tons.			tons.			tons.			tons.			tons.
1888	Nile	11,940	1891	Monterey	4,084	1884	Oldenburg ...	5,140	1883	Baudin	10,884	1889	Iki	9,672	1892	Georgi Pobledonosetz	10,280	1885	Andrea Doria ...	11,027
1887	Trafalgar		1884	Puritan	6,060	1889	Ægir	4,084	1881	Courbet	10,195	1894	Mishima ...	4,792	1886	Catherine II. ...	10,180	1884	R. di Lauria ...	10,997
1886	Anson ...	10,600	1900	Arkansas	3,235	1890	Odin		1879	Dévastation ...	10,095	1896	Okinoshima ..	4,126	1887	Sinope	10,180	1885	F. Morosini ...	11,145
1885	Benbow	10.600	1900	Nevada	3,714	1895	Siegfried	4,049	1885	Formidable ...	10,878				1886	Tchesmé	10,930	1888	Re Umberto ...	13,673
1885	Camperdown ...	10 600	1901	Florida	3,235	1894	Beowulf		1886	Hoche	10,581				1896	Rostislav	8,880	1890	Sardegna	13.640
1885	Howe	10,300	1900	Wyoming ...	3,218	1891	Frithjof		1890	Magenta	10,680				1890	Dvenadzat Apostoloff ...	8,433	1891	Sicilia	13,087
1884	Rodney	10,300				1893	Hagen		1887	Marceau	10,558							1878	Dandolo	12,071
1871	Devastation ...	9,330				1892	Heimdall		1899	Henri IV. ...	8,807									
1872	Thunderer ...					1892	Hildebrand ...		1892	Bouvines	6,691									
1882	Colossus	9,420							1893	Tréhouart ...	6,671									
1882	Edinburgh ...								1892	Jemmapes ..	6,474									
									1892	Valmy										
									1885	Caiman	7,050									
									1883	Indomptable ...	7,105									
									1885	Requin	7,078									
									1881	Terrible	7,206									
									1883	Furieux	5,925									
	11 ships.*	113,780		6 ships.	23,546		9 ships.	37,602		17 ships.	143,352		3 ships.	18,590		6 ships.	58,883		7 ships.	85,640

* Several of these will probably shortly be removed from the Navy List.

TABLE IV.—FIRST-CLASS CRUISERS.

GREAT BRITAIN.

Speed.	Name.	Displacement.
kts		tons.
25	*Invincible* ...	17,250
25	*Inflexible*	
25	*Indomitable* ...	
22¼	*Minotaur*... ..	14,600
22¼	*Shannon*	
22¼	*Defence*	
23	Duke of Edinburgh	13,550
23	Black Prince ...	
23	Achilles	
23	Cochrane	
23	Natal	
23	Warrior	
22¼	Devonshire ...	10,850
22¼	Antrim	
22¼	Argyll	
22¼	Carnarvon ...	
22¼	Hampshire ...	
22¼	Roxburgh ...	
23	Monmouth ...	9,800
23	Kent	
23	Bedford	
23	Essex	
23	Berwick	
23	Cornwall	
23	Cumberland ...	
23	Donegal	
23	Lancaster ...	
23	Suffolk	
23	Drake	14,100
23	Good Hope ...	
23	King Alfred ...	
23	Leviathan ...	
21	Aboukir	12,000
21	Bacchante ...	
21	Cressy	
21	Euryalus	
21	Hogue	
21	Sutlej	
20¼	Amphitrite ...	11,000
20¼	Argonaut	
20¼	Ariadne	
20¼	Spartiate	
20¼	Andromeda ...	11,000
20¼	Diadem	
20¼	Europa	
20¼	Niobe	
22	Powerful	14,200
22	Terrible	
	48 ships.	584,750

GERMANY.

Speed.	Name.	Displacement.
kts.		tons.
22¼	*E*	14,760
22¼	*Scharnhorst* ...	11,420
22¼	*Gneisenau* ...	
21	Roon...	9,350
21	Yorck	
20¼	Prinz Adalbert	8,858
20¼	Friedrich Karl...	
20¼	Prinz Heinrich	8,759
19	Fürst Bismarck	10,570
	9 ships.*	93,345

UNITED STATES.

Speed.	Name.	Displacement.
kts.		tons.
22	Washington ...	14,500
22	Tennessee ...	
22	*Montana*	
22	*North Carolina*	
22	St. Louis	9,700
22	Charleston ..	
22	Milwaukee ...	
22	West Virginia	13,680
22	*California* ...	
22	Colorado	
22	Maryland... ...	
22	Pennsylvania ...	
22	*South Dakota*...	
21	New York ...	8,200
21	Brooklyn	9,215
	15 ships.	186,595

FRANCE.

Speed.	Name.	Displacement.
kts		tons.
23	*Edgard Quinet*	13,780
23	*Waldeck-Rousseau* ...	
23	*Ernest Renan*...	13,427
23	*Jules Michelet*..	12,370
22	Léon Gambetta	12,351
22	Jules Ferry ...	
22	Victor Hugo ...	
21	Condé	9,856
21	Gloire	
21	Marseillaise ...	
21	Amiral Aube ...	
21	Gueydon	9,367
21	Montcalm ..	
21	Dupetit Thouars	
21	Jeanne d'Arc ...	11,092
	15 ships.	169,027

JAPAN.

Speed.	Name.	Displacement.
kts.		tons.
	Ikoma	13 750
	Tsukuba	
	Ibuki...	14,600
	Kurama	
21	Aso	7.726
20	Kasuga	7,700
20	Nisshin	
21	Idzumo	9,750
21	Iwate	
20	Yakumo	9,850
21	Adzuma	9,426
21¼	Asama	9,700
21¼	Tokiwa	
	13 ships.	138,012

RUSSIA.

Speed.	Name.	Displacement.
kts.		tons.
21	*Adm. Makaroff*	7,900
21	*Bayan*	
21	*Pallada*	
21	*Rurik*	15,000
20	Gromoboi	12,336
20	Rossia	12,130
	6 ships.	63,166

ITALY.

Speed.	Name.	Displacement.
kts.		tons.
22¼	*Amalfi*	9,842
22¼	*Pisa*	
22¼	*San Giorgio* ...	
22¼	*San Marco* ...	
20	Giuseppe Garibaldi	7,294
20	Varese	
20	F. Ferruccio ...	
	7 ships.	61,250

---

* F projected.

TABLE V.—SECOND-CLASS CRUISERS.

GREAT BRITAIN.		
Speed.	Name.	Displacement.
kts.		tons.
19¾	Crescent	7,700
20	Edgar	7,350
20	Endymion ...	7,350
19¾	Gibraltar	7,700
20	Grafton	7,350
20	Hawke	7,350
19¾	Royal Arthur ...	7,700
19¾	St. George ...	7,700
20	Theseus	7,350
19½	Diana	5,600
19½	Dido	
19½	Doris...	
19½	Eclipse	
19½	Isis	
19½	Juno	
19½	Minerva	
19½	Talbot	
19½	Venus	
19	Arrogant ...	5,750
19	Furious	
19	Gladiator	
19	Vindictive ...	
20	Hermes	5,600
20	Highflyer... ...	
20	Hyacinth	
21	Challenger ...	5,880
21	Encounter ...	
	27 ships.*	169,510

GERMANY.		
Speed.	Name.	Displacement.
kts.		tons.
21	Kaiserin Augusta	5,956
19½	Freya	5,569
19½	Hertha	
19½	Victoria Luise	
19½	Hansa	5,791
19½	Vineta	
	6 ships.	34,245

UNITED STATES.		
Speed.	Name.	Displacement.
kts.		tons.
22·8	Columbia	7,375
23	Minneapolis ...	
21½	Olympia	5,870
	3 ships.	20,620

FRANCE.		
Speed.	Name.	Displacement.
kts.		tons.
20	Dupuy de Lôme	6,676
19	D'Entrecasteaux	7,995
23	Guichen	8,151
23	Châteaurenault	7,898
18	Bruix	4,735
18	Chanzy	4,736
18	Charner	4,702
18	Latouche-Tréville	4,681
19	Pothuau	5,374
23	Jurien de la Gravière ...	5,595
21	Desaix	7,578
21	Dupleix	
21	Kléber	
	13 ships.	83,277

JAPAN.		
Speed.	Name.	Displacement.
kts.		tons.
22	Chitose	4,760
22	Kasagi	5,416
23	Soya†	6,500
20	Tsugaru‡... ...	6,630
	4 ships.	23,306

RUSSIA.		
Speed.	Name.	Displacement.
kts.		tons.
18	Pamyat Azova	6,734
20	Aurora	6,731
20	Diana	6,630
23	Askold	5,905
23	Bogatyr	6,645
23	Kagul	
23	Otchakoff... ...	
23	Oleg	6,675
	8 ships.	52,610

ITALY.		
Speed.	Name.	Displacement.
kts.		tons.
20	Carlo Alberto ...	6,396
20	Vettor Pisani ...	
19	Marco Polo ...	4,511
	3 ships.	17,303

* Blake and Blenheim converted into torpedo depot ships.

† ex Varyag.

‡ ex Pallada.

TABLE VI.—THIRD-CLASS CRUISERS.

GREAT BRITAIN.			GERMANY.			UNITED STATES.			FRANCE.			JAPAN.			RUSSIA.			ITALY.		
Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.	Speed.	Name.	Displacement.
kts.		tons.	kts.		tons.	kts.		tons.	kts.		tons.	kts.		tons.	kts.		tons.	kts.		tons.
19½	Astræa	4,360	20	Gefion	3,712	18½	Detroit	2,089	20	Davout	3,031	20	Akashi	2,657	19	Almaz	3,285	17	Vesuvio	3 373
19½	Bonaventure ...		20	Irene...	4,233	18½	Marblehead ...		20	Linois	2,308	20	Suma		23	Jemtchug ...	3,106	18	Etna	3,470
19½	Cambrian... ..		19	Prinzess Wilhelm ...		18½	Montgomery ...		20	Galilée	2,318	19	Akitsushima ...	3,150				17½	Fieramosca ...	3,534
19½	Charybdis ...		21	Gazelle	2,603	20	Albany	3,487	20	Lavoisier	2,285	17	Chiyoda	2,450				17	Stromboli... ...	3,836
19½	Flora...		21	Niobe		20	New Orleans ...		20½	D'Estrees... ...	2,421	17	Hashidate ...	4,277				21	Piemonte	2,597
19½	Forte...		21	Medusa	2,618	20	Baltimore... ...	4,413	20½	Infernet	2,435	17	Itsukushima ...					17	Calabria	2,428
19½	Fox		21	Nymphe		18	Chicago	5,273	19	Alger	4,313	17	Matsushima ...					19½	Dogali	2,055
19½	Hermione... ...		21	Amazone		19	Newark	4,098	19	Isly	4,406	18½	Naniwa	3,700				18	Elba	2,690
19¾	Æolus	3,600	21	Ariadne		19½	San Francisco...		19½	Chasseloup-Laubat	3,824	18½	Takachiho ...					17½	Giovanni Bausan	3,277
19¾	Brilliant		21½	Thetis		19	Cincinnati ..	3,213	19½	Friant	3,882	20	Niitaka	3,365				19	Etruria	2,245
19¾	Indefatigable ...		21½	Frauenlob ...	2,657	19	Raleigh		19½	Pascal	3,951	20	Tsushima... ...					18	Liguria	
19¾	Iphigenia		21½	Arcona		24	*Birmingham* .	3,750	19	Descartes	3,970	20	Otawa	3,000				18	Umbria	
20	Latona	3,400	21½	Undine		24	*Chester*		19	Cassard	3 890	25	Sutsuya ... ... (ex Novik)	3,080				17	Lombardia ...	2,351
20	Sappho		23	Bremen	3,200	24	*Salem*		19	D'Assas	3,962	23	*Tone*	4,035				20	Puglia	2,498
20	Scylla		23	Hamburg ...					19	Du Chayla ...	3,890	23	*X*							
19¾	Sirius	3,600	23	Berlin					19	Catinat	4,048									
20	Terpsichore ...	3,400	23	Munchen					19	Protet	4,001									
20	Thetis	3,400	23	Lubeck					20½	Cosmao	1,923									
20½	Pelorus	2,135	23	Leipzig					20½	Forbin	1,935									
20	Proserpine ...		23	*Danzig*					20½	Lalande	1,968									
20	Pegasus		23	Königsberg ...	3,346				20½	Surcouf	2,012									
20	Perseus		23½	*Stuttgart*	3,396				20½	Troude	1,994									
20	Prometheus ...		23½	*Nürnberg*... ...																
20	Pyramus		23½	*Stettin*																
20	Pandora	2,200	24½	*Ersatz Pfeil* ...	3,740															
20	Pioneer		24½	*Ersatz Comet* ..																
20	Psyche																			
23	Amethyst... ...	3,000																		
22	Diamond																			
22	Sapphire																			
22	Topaze																			

TABLE VI.—THIRD-CLASS CRUISERS (*continued*).

[illegible]			GERMANY.			UNITED STATES.			FRANCE.			JAPAN.			RUSSIA.			ITALY.		
[illegible]	Name.	Displace-ment.	Speed.	Name.	Displace-ment.	Speed.	Name.	Displace-ment.	Speed.	Name.	Displace-ment.	Speed.	Name.	Displace-ment.	Speed.	Name.	Displace-ment.	Speed.	Name.	Displace-ment.
kts.		tons.																		
	B*																			
20	Andromache ...	3,400																		
20	Apollo	3,400																		
19¾	Intrepid	3,600																		
20	Melampus ...	3,400																		
20	Naiad	3,400																		
19¾	Pique	3,600																		
19¾	Rainbow																			
19¾	Retribution ...																			
19¾	Spartan																			
20	Tribune	3,400																		
20	Medea	2,800																		
20	Medusa	2,800																		
19	Philomel	2,575																		
20	Pactolus	2,135																		
20	Pomone	2,135																		
	46 ships.†	148,735		26 ships.	81,859		14 ships.	45,049		22 ships.	68,767		15 ships.	52,025		2 ships.	6,391		14 ships	38,844

* The armaments of ships under B not yet surrendered.

† Besides 8 Scouts.

EFFECTIVE FIGHTING SHIPS, BUILT AND BUILDING.

Class.	GREAT BRITAIN.			UNITED STATES.			GERMANY.			FRANCE.			JAPAN.			RUSSIA.			ITALY.		
	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.	Built.	Building.	Total.
BATTLESHIPS:—																					
1st Class ...	50	5	55	22	5	27	20	6	26	13	10	23	11	2	13	4	4	8	5	3	8
2nd Class & Coast Def.	11	—	11	6	—	6	9	—	9	17	—	17	3	—	3	6	—	6	7	—	7
Total ...	61	5	66	28	5	33	29	6	35	30	10	40	14	2	16	10	4	14	12	3	15
CRUISERS:—																					
1st Class ...	42	6	48	11	4	15	6	3	9	11	4	15	9	4	13	2	4	6	3	4	7
2nd Class ...	27	—	27	3	—	3	6	—	6	13	—	13	4	—	4	8	—	8	3	—	3
3rd Class ...	46	—	46	11	3	14	20	6	26	22	—	22	13	2	15	2	—	2	14	—	14
Total ...	115	6	121	25	7	32	32	9	41	46	4	50	26	6	32	12	4	16	20	4	24

CHAPTER IV.

BRITISH SHIPBUILDING PROGRAMMES.

PRINCIPLES AND PRACTICE.

The reduced programme.

SINCE the announcement was made last July that the present Government had decided to make considerable reductions in the Shipbuilding Programme for 1906–7, embodied in the Navy Estimates prepared by Lord Cawdor and his colleagues, there have been lengthy discussions in Parliament and in the Press as to the principles which should govern shipbuilding programmes. The situation has been confused and the discussion has been widened in consequence of the fact that the Sea Lords of the Admiralty remained unchanged when the change of Government took place. Plain men have been puzzled by the circumstance that the same naval advisers who concurred with Lord Cawdor's statement of November 1905, in which the commencement of four armoured ships was declared to be an irreducible minimum for 1906–7, six months later recommended to Lord Tweedmouth a reduction of this programme by one battleship and a number of smaller vessels. The original programme involved a total liability, for ships and armaments, of £9,340,000; the amended programme reduced this to £6,800,000—a difference of two and a half millions sterling, or more than 27 per cent. Naturally such a reduction, made by the responsible naval advisers, without apparent change in attendant circumstances such as would justify radical alteration of programme, has attracted general attention and provoked strong criticism. The severest Parliamentary critics have been members of the late Government—Mr. Arthur Lee, late Civil Lord, and Mr. Balfour being conspicuous. Mr. Lee enquired, "What new facts had emerged since the Cawdor Memorandum was issued?" Mr. Balfour said, "Remember that the naval lords who have recommended this new policy to the Government are precisely the same naval lords who were in office when the original plan was put forward"; and he complained that "not the smallest hint or indication (was given) of what changes in the building programmes of foreign countries, in the magnitude of the interests we have to defend, and in our facilities for defending them, justify so great a change of policy." Since the debate took place in July last various attempts have been made to answer these criticisms, and to establish the consistency of the naval lords. Into that branch of the subject it is not proposed to enter; the main purpose of this article being to re-state briefly and definitely the principles which have regulated British shipbuilding programmes for nearly twenty years past, and which (in the judgment of the writer) ought to be followed in future if naval expenditure is to be based on definite grounds. All that need be said in passing is that it is most unfortunate to find the lengthy and strongly-worded Statement of Shipbuilding Policy issued by Lord Cawdor ending in a solemn declaration that after careful consideration of the circumstances existing in November 1905, the Admiralty decided that at least four armoured ships should be laid down, when the same naval advisers found it possible a few months later to "recommend" a large reduction in programme and expenditure. The effect on the public mind, as expressed in Parliament and the Press, has been to produce a widespread belief that the present Government has reduced our existing and available naval force: whereas the reduction has been restricted to projected vessels. For the vessels subsequently struck off Lord Cawdor's programme no justification could be found by the naval advisers of the Government: for it is inconceivable that these officers would consent to, much less recommend, the laying down of fewer ships than they believe to be necessary for the maintenance of our naval supremacy. The natural conclusion is that the original estimates exceeded real requirements.

Great relative superiority of the British Navy.

The debates on the Navy Estimates for 1907–8 have done much to dissipate previous confusion; and certain conclusions have emerged from the discussion which should re-assure the public mind in regard to our actual and relative naval force, and our prospects for the immediate future. It is universally admitted that, at present, the Royal Navy is stronger, relatively to any probable or possible combination of existing foreign fleets, than it has been at any period since the ironclad reconstruction began. Against an improbable combination such as that of France and Germany, the British Navy could bring a naval force of greatly superior power and homogeneity. It is claimed officially—and that claim is supported by overwhelming evidence—that the United Kingdom maintains its superiority in warship-building capability. Thanks, in large measure, to the enterprise of private firms in the production of ships, machinery, armour and armaments, warships can be produced in this country with greater rapidity, at less cost, and in much larger numbers than elsewhere. Furthermore, there is a consensus of opinion that even with our reduced shipbuilding programme, and assuming the realisation of the latest programmes of France, Germany and the United States, the position of assured superiority in warships available for service which Great Britain at the present time possesses will be maintained for three years to come, even if no additional ships were laid down —a most improbable condition, which no one contemplates.

Opponents of the policy represented in the amended estimates for 1906–7, and the Navy Estimates for the current year, are driven to arguments based on the desirability of approximately uniform annual expenditure on new construction; or on imaginative pictures of the decadence of British naval power, which assume that foreign programmes of shipbuilding projected for the next ten years are fully realised, while our naval authorities remain passive and take no corresponding action. The absurdity of the latter assumption is apparent: more especially when it is remembered that German naval authorities assign three years as the period of construction for large armoured ships, France assigns four years, and the United States about three years, while England can and does produce such vessels in two years. Apart from shipbuilding capability, foreign programmes are based on financial provisions which demand the full periods named, and there has been no suggestion to abridge them. Rivalry in rate of production, in short, is not attempted by foreign powers, and our admitted superiority in this respect is a most important factor in the determination of future naval power.

The standard of normal expenditure.

The argument based on the desirability of approximate uniformity of expenditure on new construction in successive financial years has more force, but its application to present circumstances requires intelligent and careful study of facts and figures. Recent Parliamentary Papers throw much light on this matter, and this is particularly true of a Return (No. 310) presented to the House of Commons on the motion of Mr. Thomasson, M.P. Taking the ten years 1896–1906, the total amount voted for new construction and armaments has been 103 millions sterling in round figures, or an average of about £10,300,000 per annum. At the commencement of this period the annual vote was a little more than 8 millions; from 1899 to 1903 it was a little over 10 millions; in 1903–4 and 1905–6 it exceeded 11 millions; in 1904–5, when the two Chilian battleships were bought for political reasons, it reached 13½ millions; in 1906–7 it was about £10,860,000; and for 1907–8 the vote proposed is about 9¼ millions. From this statement it will be seen that those who advocate larger expenditure on new construction, nominally in order to secure uniform annual expenditure, commit themselves to the fallacy that the standard should be fixed by the period of exceptional expenditure between 1903 and 1906, which was due to special circumstances; whereas, when the broader view of ten or twelve years is taken in determining average annual expenditure, no reasonable claim can be made for maintaining the high average expenditure of the past four years. On the contrary, the course taken recently in reducing expenditure on new construction and armaments is justified by a consideration of the present standing of our Fleet as compared with any probable or possible combination of foreign fleets, by the relative standing of our fleet in completed ships three years hence, and by a consideration of past expenditure and expenditure proposed by foreign powers in the immediate future.

As to the present relative standing of the British Navy in completed ships nothing need be said, as there is universal agreement. As regards the immediate future, at the end of 1910 our relative position will be as follows, supposing only two battleships are laid down this year, whereas three may be laid down; and assuming that the intentions of foreign countries are fully realised—a result that may not be attained. Of the largest and most modern types of armoured cruisers and battleships, Great Britain will have eleven completed, Germany six, France two, and the United States four. These figures are not disputed, and they furnish conclusive proof of the maintenance of our relative superiority, allowing for the restricted British programme and assuming the full realisation of foreign programmes. It will not be overlooked that next year's ships for the Royal Navy can also be ready by the end of 1910 if that course should be thought desirable.

Strong position of the British Navy.

The strong position occupied by the Royal Navy is due to persistent and continuous effort during the last twenty years, made by successive Governments and supported by all parties. It has been the rule to keep the Navy outside party politics. There has been a tendency of late in some quarters to depart from this practice and to connect reduced expenditure with the existence of a Liberal administration; but it is satisfactory to note that the Leaders of the Opposition have not favoured that course. Indeed they have admitted that a good case has been established for lessened expenditure on ships and armaments, and have been content to urge the necessity for continued watchfulness of what is done abroad as well as ample provision for the future. No British Government is likely to fail in these essential duties, nor is any political party likely to oppose the action. Representatives of the Labour party in the course of the debate on the current Navy Estimates, while representing the necessity for economy, made it abundantly evident that they are convinced supporters of the policy of maintaining the Navy at the standard of power required for the fulfilment of its duty. The only real danger would arise if the public had reason to believe that the readiness of Parliament to grant supplies for the naval service has been abused, and that extravagant expenditure, going far beyond real requirements, has been incurred.

Confidence shaken by changes in programmes.

From this side serious objection must be taken to the practice that has prevailed in recent years of inserting in Navy Estimates programmes of construction exceeding those which are subsequently carried to completion. Such a course shakes public confidence and is unduly provocative to foreign Powers. Unfortunately it has not been confined to the modification of the Cawdor programme above described, but goes over a series of years. Four years ago three battleships intended to be built in private yards were laid down in the Royal Dockyards, and repairs which could have been best done in the latter were entrusted to private firms. In 1904–5 four armoured cruisers, representing an aggregate liability of about six millions, were proposed in the Estimates, and only three were laid down. In the following year four armoured cruisers of the Invincible class, representing a total liability of about eight millions, were proposed, and again one was dropped. This procedure is objectionable: it indicates a lack of forethought or due consideration of circumstances existing when a programme is framed. It would be more satisfactory and likely to command public confidence if minimum programmes were inserted in the Estimates: then if the need arose subsequently for extensions, Parliament could be asked to grant additional funds and the reasons could be given. Lord Goschen did this eight or nine years ago. The precedent is one worthy of imitation in cases when doubts exist as to the intentions of foreign Powers when our Estimates have to be framed. Apologists for the Admiralty action above described have attempted to show that the numerous reductions made in recent Shipbuilding Programmes have been justified by changes in circumstances occurring after the programmes were framed. Indeed, the frequent repetitions of this course which have been mentioned have been used in justification of the action of the Sea Lords last year. No reasonable person can doubt, however, that it is preferable to add to programmes if conditions change, rather than to ask for a greater outlay than is ultimately necessary. The patience of Parliament and the nation is not unlimited: the cry of "Wolf" may be raised too often. Public confidence in naval administration can only be maintained by the assurance that all Navy Estimates are based on a mature consideration of great questions of policy, involving large expenditure. Once shaken, that confidence cannot readily be regained.

It is important to recognise the distinct responsibilities of the Government and the Admiralty in regard to shipbuilding policy and

Responsibility of the Government for Naval policy.

programmes. The Government of the day must accept absolute responsibility for the adequacy of our naval force, and for the corresponding financial provision. Upon the Cabinet must rest the decision as to the standard of strength to be secured, since the Cabinet alone possesses complete information in regard to international relations and our foreign policy, or to the possibility of war. The most formidable combination of foreign Powers which should be assumed in fixing the standard of our naval power is also a matter for Cabinet decision. When that decision has been reached the First Lord of the Admiralty is able to inform his colleagues; and upon the Board of Admiralty—guided chiefly by the advice of the Sea Lords—rests the responsibility of deciding upon the numbers and types of ships required to meet the naval forces of the combination of Powers assumed as possible or probable by the Cabinet. This statement is a truism, no doubt, but a truism frequently overlooked in discussions of the subject. It is often tacitly assumed that the Sea Lords of the Admiralty are sole arbiters of the standard of naval strength, including the decision as to the most formidable combination of foreign fleets to be provided against. Such a view ignores the plain duty of the Government, and is as erroneous as it would be to regard the discussion and settlement of the proper numbers and types of ships to be provided as part of the work of the Cabinet. Questions of expenditure for each year, and of liabilities incurred by Shipbuilding Programmes, of course must be dealt with by the Government: difficulties may arise—in fact, have arisen—between the Admiralty and the Cabinet in regard to these matters, and then the Board of Admiralty is entitled to hold its own or to resign. But as regards purely technical and naval questions, the Admiralty is and must be supremely responsible. Under these heads come variations between programmes and performance; and for them the members of the Board, and particularly the naval members, must answer.

The two-Power standard as a working rule.

Arbitrary rules for the standard of our naval strength are much in favour in some quarters. The "two-Power" standard is generally advocated, and was a good working rule from 1888 to 1905, because the two most powerful fleets were those of France and Russia, and the possible alliance of these Powers against Great Britain was within the scope of practical politics. Most fortunately our relations with France are cordial, and likely to remain so, and the other European fleet ranking next to the French in force—that of Germany—is not at all likely to be combined with the French against us. As a "rule of thumb," however, it is recommended that the permanent interpretation of the "two-Power" standard should be an assumed combination of the *two most powerful fleets existing at any time.* As has been stated, this matter is, in present circumstances and for three or four years to come, only one of academic interest, since the Royal Navy in completed ships is and will remain superior to the combination of the fleets of any two Powers. On the other hand, it cannot be denied that the doctrine of absolute responsibility on the part of the Government for the adequacy of our defensive forces carries with it the right of the Government to decide on the mode of assessing the proper standard of strength. As Mr. Robertson said in the recent Naval Debate, circumstances were conceivable where the two-Power standard, if applied in the sense suggested, would give an unreasonable margin of strength; and, on the contrary, international relations might demand the provision of a Navy much in excess of that standard. History proves that the latter condition is no mere effort of imagination: but in present circumstances its occurrence is extremely improbable. Rigid formulæ are inapplicable in the solution of this problem: Governments alone can be responsible for the decision.

Policy in framing shipbuilding programmes.

After the responsibility of the Admiralty has been narrowed by the recognition of the paramount responsibility of the Government, the Board has no easy task to fulfil in determining its successive Shipbuilding Programmes. Such programmes necessarily have to be framed for periods of years, whether they are published to the world or treated confidentially. In the Naval Defence Act of 1889 a five years' programme was included, and the whole scheme was made public. Since that Act, and no doubt as the result of experience in its working, the Admiralty has only published in each year's Estimates the work proposed to be done in that year. Occasionally, as happened last year, circumstances have led to a statement being made of intentions going somewhat beyond the current Estimates; but these prospective statements are unusual and generally undesirable. Germany and France proceed differently, and go much beyond the quinquennial period in framing programmes which are published. On the other hand, they reserve and exercise the right to amend and alter programmes, and we have a striking illustration in the revision made last year in the German Programme of 1900. It will be obvious that with our superior power of production, we gain considerably by having full information available as to the intentions of other Powers, the financial provision proposed, and the anticipated dates of completion of new ships. No reason can be found, however, for reverting to the procedure of the Naval Defence Act of 1889.

Unwise secrecy.

It is undoubtedly better in our circumstances to be committed only to publication of the scheme for the current financial year. In regard to that scheme, however, Parliament and the public have the right to full information as regards future liability as well as to the expenditure in the year; and there are grave objections to the course commonly taken, when a small sum inserted in the Estimates for one year commits the nation to a very large and undefined liability in subsequent years. In this respect the German and French Navy Estimates, and the United States practice of passing a law defining the total expenditure authorised for each ship, are superior to our method. As an example, the Invincible class of armoured cruisers may be taken. Lord Selborne's Statement explanatory of the Estimates for 1905–6 said that four armoured cruisers were to be laid down that year. The Estimates showed that they were to be built by contract, and the total expenditure anticipated on the four vessels in that year was about £140,000. Only three of the four ships were ordered; the actual expenditure on them in 1905–6 was about £275,000; the total liability incurred (including armaments) approaches £6,000,000. No official description of these vessels or statement of the liability incurred by their construction was made until they had been many months in progress; and the Navy Estimates for 1907–8 contain meagre information in regard to them, although the vessels are now afloat or ready for launching. For other vessels, ordered previously and subsequently, the long-established practice is followed; details of dimensions, engine power, armament and speed are given in the Estimates, and the comparative tenders of different firms can be seen. But for these important vessels corresponding information is refused; nominally because they are of novel type, and that it is important, in the public interest, to withhold the facts as to armour, armament and speed from the knowledge of competing designers for foreign navies. All these particulars have been open secrets for a considerable time past. German naval authorities have designed still larger cruisers which they consider to be more formidable, and the first of these has been ordered recently. From the nature of the case, after a warship has been laid down information as to details of design must be in the hands of many persons, and can be procured by those who attach importance to its acquisition. This is a matter of common knowledge; it is idle to assume that secrecy such as is claimed can be preserved. Moreover, in the technical and popular Press much information has been published. Yet in official documents and for Parliamentary purposes secrecy is nominally maintained. It is to be hoped that before long the older and better way will be restored. On the financial side the House of Commons has the right to demand complete information; on the technical side it might well imitate the United States Senate, which refused to vote funds for the construction of new battleships until their principal particulars had been furnished.

Future financial liabilities.

It should be insisted upon, moreover, that all programmes of shipbuilding submitted to Parliament should be accompanied by statements showing the *complete liability* involved. During the last two years the Financial Secretary of the Admiralty has recognised the propriety of taking this course. It was taken also in the Naval Defence Act of 1889 and the Imperial Defence Act of 1888, and a similar course is taken in the financial Statements attached to foreign Shipbuilding Programmes. The French Navy Estimates, in this respect, are remarkably clear and complete, Germany follows a similar method, and in the United States special laws are passed in connection with the authorisation of new ship-construction fixing the upper limit of expenditure per ship. Any excess has to be met by a supplemental enactment; and in the case of the Connecticut the completion of the vessel was deferred until an additional appropriation was made by Congress. These examples of good procedure ought to be imitated and embodied in British Shipbuilding Programmes. Parliament should insist on a statement of complete liability before making initial grants for particular ships or services. Each year details are given of the numbers and general type of vessels proposed to be laid down. There should be an accompanying statement of approximate total liability, including armaments, ammunition and reserves.

Cost of ships and armaments.

The common practice in our Navy Estimates and Statistical Statements is to give the first cost of ships *exclusive* of armaments, ammunition and reserves. In foreign Returns a different basis of accounts is usually adopted. Comparisons are therefore difficult to make in an exact fashion. For the Naval Defence fleet of 70 ships the original estimated cost was 21½ millions, of which amount about 16 per cent. represented armaments, ammunition and reserves. On the basis of Mr. Thomasson's Return above-mentioned, out of the 103 millions voted for New Construction and Armaments between 1896 and 1906, more than 9½ millions belonged to armaments; but it is not stated whether this sum includes reserves of guns, gun-mountings, and ammunition for the new ships. In the French Navy Estimates, taking a considerable period, the cost of armaments for new ships averages about one-sixth of the cost of the hulls, armour, machinery, etc. The German Navy Estimates are arranged differently from the British and it is not easy to make a detailed comparison between them; but the principle of stating the complete liability—inclusive of armaments—involved in Shipbuilding Programmes is strictly observed. The foregoing figures show how important it is not to restrict attention to provision made under the

Vote for Shipbuilding in our Navy Estimates when considering expenditure on New Construction. Each year there appears a careful analysis of the Shipbuilding Vote (8) under the several heads of New Construction, Repairs and other services. There ought to be a corresponding analysis of the Ordnance Vote (9), from which the expenditure on armaments, ammunition, and reserves involved in the construction of or assigned to new ships should be ascertainable. Mr. Robertson gave figures to the House of Commons for the current and last financial years and thus furnished further illustration of the foregoing statement. Last year in connection with New Construction in Vote 8, the provision for new Shipbuilding was £9,235,000; and that (Vote 9) for armaments was £1,624,000. This year the corresponding figures are: Vote 8, £8,100,000; Vote 9, £1,227,000. In these two financial years, therefore, the total expenditure on and for new ships and their armaments will exceed 20 millions sterling, but only 17⅓ millions will appear in the Statistical Returns usually published, which show only expenditure falling on Vote 8. On armaments for new ships 2¾ millions will be spent, and according to past practice this large sum would not be taken into account in dealing with new construction. It will be seen, therefore, to be no mere "pedantry of finance" but a real necessity for exact knowledge which prompts the suggestion made above. Apart from the inclusion of expenditure on armaments for new ships, no fair comparison is possible with the expenditure of other navies on New Construction. Mr. Thomasson's Return is the first official document making such a comparison, and it is most instructive. If it errs at all it errs in crediting larger sums to foreign New Construction than are really spent.

Taking the ten years covered by that Return,* the following tabular statement represents the summarised results (in round figures):—

—	Total Naval Expenditure.	Amount voted for New Construction and Armaments.	Amount of New Construction.
	£	£	£
Great Britain . . .	290,675,500	102,920,200	1,132,200
France	120,610,200	48,418,600	388,600
Russia†	92,140,000	31,604,600	341,100
Germany	81,974,400	37,010,500	378,300
Italy	47,017,000	12,535,500	123,000
United States . . .	152,403,700	48,938,200	503,100

† Russia has also spent certain special credits on New Construction, including £11,500,000, spread over 1897–1901.

---

* Details are given in Part III.

For Great Britain the actual expenditure on new construction and armaments over this period has been about 100 millions sterling, or very nearly the amount voted. During the period 1897–99 the great engineers' strike hindered progress, upset arrangements for executing work of all kinds, and practically accounted for the relatively small excess of Votes over expenditure. So close an agreement between estimates and expenditure in transactions of such magnitude and variety is a remarkable proof both of the productive power of the country and of good administration.

Advantage of cheap and rapid shipbuilding in this country.

The magnitude of New Construction work done for the Royal Navy is apparent in the figures for both expenditure and tonnage. As shipbuilding can be performed more cheaply in this country than abroad, our relative gain is greater than appears from the figures for expenditure on new ships and their armaments. Apart from this, our expenditure exceeds that of any two Powers, and is rather more than that of France, Germany and Italy combined. The tonnage shown is the displacement "tonnage, when completed, of vessels launched" in the ten years. Displacement tonnage, of course, is not an entirely trustworthy standard of comparison for warships; but it must be recognised that for ships of similar type designed at the same date displacement tonnage does indicate roughly how aggregate additions made in the ten years to different fleets compare with one another. On this basis additions to the Royal Navy from 1896 to 1906 exceed in aggregate tonnage the corresponding additions made to the war fleets of France, Germany and Russia during the same period. They are considerably in excess of the largest additions made to any two foreign fleets. Notwithstanding the great efforts made to strengthen the United States Navy, the additional tonnage for that fleet is less than one-half of that for the Royal Navy. France and Germany have each added about one-third as much. The average expenditures per ton on New Construction shown by the Return are as follows: Great Britain, £91; France, £124; Germany, £98; United States, £97. Here, again, the figures cannot be regarded as furnishing exact comparisons of cost, but they confirm the view that British warship-building is cheapest.

All who have at heart the maintenance of British naval supremacy must be reassured by the foregoing statement of facts. If it be true —as is generally admitted by foreign authorities, and is asserted by official British writers—that warships can be produced in this country at less cost as well as more rapidly than elsewhere, then the relative magnitude of the amounts voted and expended on New Construction indicate that splendid efforts have been made, and satisfactory results achieved. To these causes we owe the position now occupied by the Royal Navy. Writers who advocate continuance at the higher level of expenditure on New Construction which existed from 1903 to 1906 do not deny either that the present position is satisfactory, or that it will continue to be so for three or four years on the reduced scale of expenditure now prevailing. Their main argument is that the new programmes of France and Germany will compel us eventually to resume larger expenditure, and they advise that we should "lay down ship for ship" in order to keep pace with additions made to their fleets by the two strongest naval Powers. This reasoning, however, is fallacious; it fails to take into account the advantages resulting from the superior shipbuilding resources of this country, and would lead to extravagant expenditure.

The Royal Navy ought always to possess an undoubted superiority of *completed* ships available for service, and be ready to encounter the most formidable combination of foreign fleets which may be regarded by the Government as possible or probable. This does not involve, however, a necessity for "laying down ship for ship" as compared with two or more hypothetical rivals. As we can build more quickly, any selected date for completion for foreign ships can be complied with, although a later start is made with British ships than with competing foreign ships. Our powers of rapid construction ensures this result, and it would be folly not to utilise the consequent advantages. In the struggle for naval supremacy it is advantageous to know what rivals are doing or proposing to do in the designs of new ships before competing designs are finally settled. Again and again this has been demonstrated; nothing has occurred to disturb confidence in the policy that has served us well; no sufficient reason has been advanced for reconsidering the question. The allegation has no force which states that because Germany has built some warships as quickly as Great Britain has built similar ships our advantageous position has disappeared. British naval administrators have not to deal with possibilities, but with the announced intentions of the German Government, and these fix three years for the construction of battleships and large armoured cruisers. On the other hand, the official policy announced by Lord Cawdor, and endorsed by Lord Tweedmouth, is to occupy only two years in building our largest warships. The German Admiralty has arranged its finance on the basis of a three years' period. This difference of procedure alone justifies our later start, and it enables our designers to gain full information in regard to foreign designs before completing their tasks. In this way superior fighting power can be assured for new British ships as compared with foreign ships completed at the same date. The policy does not involve slavish copying of foreign models; it does not rest on simple additions to size, armour, armament, speed and coal supply. The responsible authorities may decide to adopt entirely different designs from those approved by foreign Powers, or to build a greater or a smaller number of ships than have been laid down abroad. These are matters for the Admiralty to decide. Outsiders may form and express independent opinions on the action taken, and there is room for difference of opinion; but no one will dispute the right of responsible authorities to deal with the subject as they may think best, provided that thorough consideration precedes decision. An essential condition in such consideration must always be found in careful study of the characteristics of the latest foreign warships. Those characteristics are open to considerable modification until the work of construction has been carried through its preliminary stages, and when they are definitely fixed they can be dealt with in completing designs. Before laying down our replies to new foreign ships, we should ensure that full information has been obtained in regard to the forces which may be employed against us; and we can afford to wait until that result has been attained.

The reduced programme justified.

It has not always been possible to wait, because, at certain periods, a long-continued neglect of adequate additions to the Fleet has eventually compelled the adoption of heroic measures, the framing of special programmes and pioneer action in devising new types of ships. The Naval Defence Act of 1889 was a case of this kind. It was avowedly framed to overtake arrears of shipbuilding, and involved the introduction of many new types, all of which were meant to surpass in power corresponding types in foreign fleets. After this great effort came a pause, which was continued too long, and had to be made good by the Spencer Programme of 1893–4. Present conditions differ essentially from these typical cases. We possess at present an unquestioned supremacy—no arrears have to be made up. France and Germany are embarking on new programmes, and have to face problems in armament, propelling machinery, and other features which require careful study and the preparation of entirely new designs. All this means slower progress, especially during the earlier stages of construction. Everything points, therefore, to the desirability at present of minimising the number of British ships laid down, concentrating expenditure on the completion of ships building, and making sure that existing ships on the Effective List of the Royal Navy are maintained in a thoroughly efficient state. In these circumstances a reduced programme of New Construction is clearly justified, quite apart from the discussion of the question of limitation of armaments by the Hague Conference. Such limitation is earnestly to be desired if it can be arranged, but in any case our wisest policy in the immediate future is to make the naval forces we possess available for immediate service, and to be content with modest additions until action taken abroad makes further construction necessary to the maintenance of naval supremacy.

Policy of the Dreadnought and Invincible class questioned.

A striking departure from traditional policy was made when the construction of the Dreadnought and the Invincible class of cruisers was undertaken. It has never been claimed that there was urgent need for the addition of these large and costly ships to the Royal Navy because of action taken abroad, or because our then-existing naval force was inadequate to fulfil its duties and to meet all demands. Yet remarkable efforts were made to hasten construction; the means used to maintain secrecy were exceptional, and the attention of the world was naturally concentrated on the new vessels. At that period it was known that France was on the eve of a further programme of shipbuilding; Germany was sure to match any effort made by France. Discussions were in progress as to the best armaments for future battleships, and the propriety or otherwise of adopting single-calibre heavy guns and abandoning secondary armaments. If ever there was a time for Great Britain to have taken advantage of its superior warship-building capability, and to have waited for the action of possible rivals before deciding on its further programme, it was surely at the end of the year 1904. Our naval supremacy in completed ships was assured; we had a considerable number of ships in hand on which large expenditure was possible, and the completion of which at the earliest date was desirable. Yet at this moment it was decided to "force the pace" by laying down and pressing to completion four vessels, representing a total liability of eight millions sterling. Even if all the claims made for the surpassing powers of these vessels were admitted, it would still be true that there was no justification for a departure, at that moment, from our well-tried policy of waiting and "going one better" than foreign Powers.

The argument in the contrary sense runs as follows: The single-calibre heavy gun was bound to come, increased speeds were certain to be adopted, therefore by taking the lead in building new types we gained substantially. This argument, however, ignores fundamental facts. The then existing British Navy, independently of the additions of the Dreadnought and Invincibles, was admittedly superior to any possible combination. British shipyards could produce new vessels that might be needed to match new foreign warships in greater numbers and in less time. In these circumstances it was unwise for the British Admiralty to take a new departure, and by its action to compel the attention and rivalry of other naval Powers. As a consequence there has already been a great growth of expenditure, which will continue, but will leave *relative naval force* much as it was before, because we are bound to maintain supremacy at all costs. Moreover, if the alleged superiority of the new types is real—a matter lying outside the present discussion—then by introducing Dreadnoughts and Invincibles the Admiralty has reduced the fighting power and relative value of the pre-existing British Fleet, although there may have been no intention to do so.

An advantage given to foreigners.

Another result of the action taken has been to give foreign designers information as to the characteristics of our latest types; and in France, Germany and the United States it is claimed that advantage has been taken of the opportunity, and that the newest types in each of those navies, in the opinion of the responsible authorities, will surpass the British models in fighting power. Attempted secrecy in this case has broken down, as it was bound to do, and the advantage that has been long our own, and might have been retained, has been given to rivals. Much has been made of the fact that the preparation of the designs for foreign vessels intended to over-match our latest types has delayed the work of construction, and prevented the laying down of foreign battleships or large cruisers at intended dates. Such arguments are puerile. The qualities embodied in the new warships will be permanent; if the foreign ships are really superior to the Dreadnought and Invincible types, that advantage will continue as long as the vessels remain on the Effective Lists. As the British Navy is admittedly superior, the delay of some months in the laying down and completion of the foreign ships is of small importance. The really important matters are that our rate of expenditure on New Construction, measured by the costs of individual ships, has been increased unnecessarily, that we have added without reason to a previously existing superiority of force in ships completed at given dates, and have sacrificed unnecessarily the advantages attaching to later dates of laying down ships which were possible because of our greater productive power. All this is much to be regretted. It might have been possible, if the Dreadnought and Invincibles had not been laid down until foreign action was taken, to have reduced expenditure on New Construction earlier, and yet to have maintained a considerable margin of strength.

It is wise, no doubt, to give full credit to possible performances of rivals when framing British shipbuilding programmes. On the other hand, it cannot be forgotten that foreign programmes extending over long periods have been frequently modified, and in many cases have taken much longer in completion than was intended. The French Programme of 1900 is not yet finished, and this is chiefly due to interference and interruption on the part of successive Ministers of Marine whose views on naval policy have differed. The German Bill of 1900 has been modified by the Bill passed last year, and there is already talk of further modification. On the whole, no doubt the German Programme has been carried out in substantial agreement with the original intentions as to dates of completion; this has been due in great part to the liberal allowances made in fixing periods of construction, and to well-considered financial arrangements. Whether or not equally good results will be obtained with much larger and more costly ships whose designs include many novel features, only time will show. In any case, it is wiser to adhere to our former policy and to settle British Programmes year by year in view of actual progress made abroad, and after foreign vessels have been laid down.

The need of cruisers.

Without infringement on the province of responsible authorities, it may be remarked that the settlement of British Programmes for battleships must be much more influenced by what is done abroad than is the settlement of cruiser programmes. In the former case numbers as well as types must be governed chiefly by the corresponding features in foreign fleets. For cruisers, types are regulated to a great extent by similar consideration of foreign navies; but there are altogether special requirements in our service, growing out of the nature and extent of the British Empire, and the magnitude of our Mercantile Marine and over-sea trade. It is interesting to note that in recent debates there has been renewed recognition of the necessity for making proper provision for cruisers, including the smaller classes which from time immemorial have been built for special services, and largely for miscellaneous duties permanently requiring fulfilment in peace time as well as in war. Mr. Balfour has recently put the case clearly, and his remarks are the more important because two years ago his public utterances in regard to the "scrap-heap policy" undoubtedly went further than was reasonable. The Royal Navy always has possessed, and always must possess, ships other than those built to take their places in the "fighting line." Just now there is a lull in the construction of cruisers. The circumstance is the more notable because it follows upon a wholesale removal from the Effective List of small protected cruisers which were capable of continued service, while the services of corresponding types are retained in many foreign navies. In the programme for 1907–8 only one small cruiser is included, and she has been described as specially adapted for service in narrow waters and as a "mother ship" for torpedo-boat destroyers. Meagre details have been furnished hitherto: it is to be hoped that when the Shipbuilding Vote comes under discussion fuller particulars will be given of the nature of the services for which this vessel has been designed. The well-known case of the eight "scouts" upon which considerably more than two millions have been spent, while they have never been employed on scouting duties with fleets, and have not the coal supplies needed for such duties, cannot be forgotten. The new vessel appears to be of a very similar character, and it is important that more satisfactory results shall be obtained with her than with her predecessors.

Unnecessary hastening of construction of untried new classes.

When new departures are made in warship construction it is desirable to limit the numbers of vessels built until the first examples have been completed and thoroughly tested. British resources are so great that it is possible to multiply an accepted type with great rapidity, and it is always advantageous to have practical experience and experiment when novel features or types have been introduced. A good example of this policy is to be found in the torpedo-boat destroyer class. Four vessels were first ordered of two leading firms: after the pioneer vessels had been tried and found satisfactory in all their principal features, large orders were distributed to a number of the leading private shipbuilders, and in a comparatively short time this section of our naval defensive force was made formidable. On this ground it would undoubtedly have been desirable to have thoroughly tested the Dreadnought before the three new vessels of the class were laid down. No adequate reason has been given for proceeding with these vessels, having regard to the fact that France and Germany have delayed the commencement of the corresponding ships. The long cruise of the Dreadnought will have given most valuable experience of her sea-going qualities, as well as with the working of her turbine engines and the use of her armament. But many questions still remain to be investigated, bearing upon the tactical value of her high speed and the relative value of her armament; and these questions can only be dealt with by attaching the Dreadnought to a fleet, and comparing her with earlier types, so that officers of experience may reach definite conclusions. Great advantages must result from such experimental trials; but it is to be feared that they cannot be made available in regard to the three new battleships laid down or ordered in 1906-7, and now being rapidly advanced in construction.

Possibly the decision to proceed with these vessels was largely due to the desire to avoid too sudden a drop in the scale of New Construction, and it is undoubted that serious difficulty and dislocation of manufacture do arise from great and sudden variations of programme. Similar arguments do not apply, however, to the two or three new battleships it is proposed to lay down late in 1907–8, on which only £345,000 would be spent according to the Estimates.

It should be possible, and is obviously desirable, to make exhaustive trials of the Dreadnought, and to reach definite conclusions as to possible improvements, before those vessels are laid down. There will be cause for serious complaint if this course is not taken.

Royal Dockyards and private yards—distribution of work.

Another feature of shipbuilding programmes which is of considerable importance in the public interest is the distribution of the work between Royal Dockyards and private firms. It is true, of course, that even for ships built in the Dockyards private firms have to give substantial aid, as they furnish materials, machinery, armour, guns and gun-mountings. The Dockyards undertake the actual work of construction and assemblage of the parts of individual ships and, strictly speaking, their chief contribution is in the form of labour. For example, out of the total expenditure on New Construction for this financial year—exceeding £8,100,000—the cost of Dockyard labour is only about £600,000. The total outlay proposed (exclusive of establishment charges) for Dockyard-built ships exceeds three millions, and that for contract-built ships is about five millions. These figures illustrate the important part played by establishments created and maintained by private enterprise in the production of warships. The work done by these establishments for foreign navies is additional, and frequently of large amount, so that their existence and continued efficiency are essential to our naval supremacy. No one disputes the propriety of generous treatment by the Government of these important shipbuilding, engineering and metallurgical works. In order to continue that support, however, during a period when expenditure on New Construction is less than the average of many years it will be desirable, no doubt, to diminish the proportion of new work given to the Royal Dockyards, and to concentrate their employment more on the repair and maintenance of the fleet. That is the purpose for which the Dockyards chiefly exist; they are great arsenals kept ready and efficient for the rapid repair and refit of our fleets in war-time. With modern warships filled with machinery and delicate mechanism, the cost of upkeep increases as compared with earlier and simpler types. The growth in numbers and costs of our warships adds to the cost of maintenance. It is asserted, and there is reason to believe, that repairs have not been dealt with so thoroughly as is required for complete efficiency. However this may be, it is but just to private enterprise that no more New Construction shall be placed in the Royal Dockyards than is needed to give regular employment to the number of men whose continued presence there is necessary for the execution of repairs in peace, and to provide the margin of numbers which is considered proper to meet the requirements of war. It may be doubted whether the distribution of orders for new ships in recent years meets this condition fairly: Out of the three Dreadnoughts ordered in 1906–7 only one was placed in a private yard, and a similar course is proposed for this year if three battleships are laid down. It is not clear what will be done if success attends the proposal for limitation of armaments at the Hague Conference; but obviously private yards ought not to be left without an order, and the Dockyards could be usefully employed, no doubt, on clearing off arrears of repairs and putting ships in reserve into a state of thorough efficiency. This policy involves no reflection on the excellence of the shipbuilding work done by the Dockyards in the past—that has been placed beyond question by many examples of rapid and efficient construction, culminating in the *tour de force* accomplished in the case of the Dreadnought. After making allowance for all the assistance given by private firms, and the magnitude of the tasks definitely assigned to them, no one will dispute the merit and remarkable character of the achievement. On the other hand, in the public interest it is of the first importance that the great private establishments shall receive proper State patronage if they are to be kept efficient for the purpose of warship building; and this can only be done in times of reduced expenditure on New Construction for the Royal Navy in the manner proposed. Superior warship-building capability is, and should remain, the foundation of our naval power so far as *matériel* is concerned. It is a precious possession, gradually increased in value by private enterprise encouraged by Government orders, and its continued existence is of supreme importance.

CHAPTER V.

BRITISH NAVAL MANŒUVRES IN 1906.

Introductory.

IN a chapter on "The Attack and Defence of Commerce" contributed to the *Naval Annual* of last year the present writer sought to show that so long as this country retains the command of the sea, the maritime commerce of the whole Empire, though not entirely immune to capture and loss, will, on the whole, be exposed to far less risk than British maritime commerce had to incur in the war of the French Revolution and Empire—a risk which has been estimated at not more than 2½ per cent. per annum on the total value of the commerce involved. This conclusion was based partly on the study of naval history, partly on an examination of the conditions of modern naval warfare as determined by changes in the *matériel*, structure, equipment, and enduring mobility of the modern warship. But it was largely a theoretical conclusion. During the whole of the last century after the peace of 1815 there has been no such *guerre de course* on the grand scale as was witnessed during the Napoleonic wars. Warlike experience is therefore in large measure lacking, as was shown at length in the course of the discussion. On the other hand the change of conditions, material and strategic, has manifestly made for the advantage of the superior Naval Power. But this, too, is rather a matter of reasoning than of direct experience in war. Nor can peace manœuvres, which must always have a large element of unreality and make-believe in them, be expected to afford a complete solution of the problem. Nevertheless, the problem is one of such stupendous moment to the people of this Kingdom and Empire—whose maritime commerce, and all that it implies, is their very life-blood—that exceptional importance attaches to the Naval Manœuvres of last year which were designed for the special purpose of studying the question experimentally, so far as such experimental examination of it could be prosecuted under the limiting conditions necessarily incidental to a state of peace. It is the purpose of this chapter to examine and record the results of this momentous experiment.

The general idea.

The general idea of the operations was expounded by the Admiralty as follows:—

The co-operation of the mercantile marine has been invited.

The general idea of the manœuvres is based upon the assumption (for manœuvre purposes) that war has broken out between a stronger Naval Power (Red) and a weaker but still formidable Naval Power (Blue).

Although under such circumstances the primary object of the Red Commander-in-Chief would be to seek out and defeat the Blue Fleet wherever it appeared, it is not to be expected that the Blue Commander-in-Chief would risk a general engagement with the Red Fleet, unless he could bring to action a portion at a time, and under conditions favourable to himself.

Among the steps that he would be likely to take to cause a dispersion of the Red Fleet, with a view to obtaining such an opportunity, the most likely to succeed would be an attack on the Red Trade.

In adopting this course he would count not only on the actual loss he would be able to inflict on his enemy, but also, if the Red Nation was one largely dependent on its commerce, he would be able to reckon on creating a national panic which might compel the Red Commander-in-Chief to disperse his forces to an extent that neither the actual risk to commerce nor sound strategy would justify.

The investigation of the actual risks to which the trade is likely to be exposed under these conditions, and of the best means of affording it protection, without sacrificing the main object of taking every opportunity of bringing the enemy's fleet to action, is evidently of great importance not only to those who have to conduct the operations, but also to the mercantile community.

An under-estimate of the risk to the trade and a too great concentration of the Red forces, might give the enemy the chance of inflicting great and avoidable loss on the merchant shipping, while on the other hand an over-estimate of the risk might lead to a great rise in the rate of insurance and an almost complete stoppage of trade, which would be more injurious to the country than any losses likely to be inflicted directly by the enemy.

In either case a demand would probably arise on the part of the Red community for an injudicious dispersion of the Red forces on expeditions for the direct protection of trade, which would render them liable to be defeated in detail, and greatly reduce the chance of bringing the enemy's main fleet to action.

Such in outline are the problems to be elucidated (so far as practicable), during the forthcoming manœuvres.

Red territory will consist of England, with defended ports at Milford, Falmouth, Portland, Plymouth, Portsmouth, Sheerness, Swansea, Cardiff, and Barry.

Blue territory will consist of Scotland, Ireland, and the Channel Islands, with defended ports at the Firth of Forth, Queenstown, Berehaven, and Alderney.

Orders and regulations.

This general idea is more fully elucidated in the following "Orders for Grand Manœuvres" issued by the Admiralty:—

On Saturday, 23rd June, all ships are to return to their defended ports, as follows:—

Red — *Mediterranean Fleet*, *Third Cruiser Squadron* and *Barham*, with five destroyers at Gibraltar, and the remainder in English ports.

Blue — VULCAN and five destroyers at Lagos, and the remainder in south of Ireland ports, except such torpedo craft as may be in Channel Island ports.

The manœuvre area is to be considered as bounded by the parallels of 60° and 30° N. latitude and the meridians of 10° E. and 20° W. longitude, but ships are not to approach foreign shores nearer than the 3-mile territorial limit, except at Lagos, 15 miles east and west of which this rule is not applicable.

Merchant vessels are to be considered as outside the manœuvre area when above the lines of Ushant to Lizard, Smalls to Tuscar, and Smalls through Lundy to Hartland Point.

Merchant vessels bound to, or from, the Mediterranean are not to be attacked in the Gut of Gibraltar to the eastward of the meridian of Cape Spartel.

Merchant vessels bound to south Atlantic ports must not be attacked south of 37° N. latitude.

Merchant vessels must not, however, cross these limiting lines merely to avoid capture, if they are not on their route.

The Blue forces are not to approach Arosa Bay within a radius of 15 miles from Salvora Lighthouse.

To enable the manœuvres to be carried out under conditions resembling as nearly as possible those of real war, a scheme is in course of preparation by which it is hoped to secure the co-operation of a number of merchant vessels.

Shipowners having steamers entering the manœuvre area between June 23rd and June 29th inclusive, have been invited to allow certain of their vessels to participate.

It is proposed to include steamers outward bound *viâ* the Mediterranean and South Atlantic, and steamers homeward bound *viâ* the Mediterranean, but steamers carrying mails, passengers (excepting where the conditions of the passenger tickets authorise the vessels co-operating in the manœuvres), live stock, chilled meats, green fruit or vegetables, will not be asked to take part.

Co-operating vessels will be required to conform to the following conditions:—

1. They will call at Falmouth or Milford Haven if outward bound, and at Gibraltar if homeward bound, and make their passages thence in company with other vessels or otherwise, as may be directed by the Senior Naval Officer in these ports. It is proposed that as vessels collect in the above ports they should be despatched along the trade routes in groups of 12 or less, and it is anticipated that vessels will not be delayed on their voyage for more than 60 hours.
2. At each port the masters of vessels will receive full instructions concerning the future conduct of their ships and the order in which their groups will sail. They will be required to conform to these instructions and to obey signals made to them.
3. Whilst co-operating they will fly a Red ensign at the fore, the enemy's men-of-war being distinguished by a Blue ensign on the triatic stay abaft the foremast.
4. They will be required to do their best to escape from the enemy and to communicate any information they may possess to men-of-war of their own side.
5. Should an enemy's man-of-war approach within three miles by day or one mile by night of a vessel, fire three guns and hoist a signal to stop by day, or throw the search-lights on her at night, the vessel will be considered captured and will stop and allow herself to be boarded. After capture a vessel will communicate no information to either side.
6. Co-operation will be considered as having ceased, and a vessel will haul down the Red ensign, be free to part company, and shall proceed on her voyage:—
   (*a*) on passing: the line between the Tuskar and Small Lights, if bound up the Irish Channel; the line through the Smalls and Lundy Island Lights, if bound up the Bristol Channel; the line between the Lizard and Ushant, if bound up the English Channel; the meridian of Cape Spartel, if bound for the Mediterranean; and the latitude of Cape St. Vincent, if bound for the South Atlantic;
   (*b*) after having been captured and boarded;
   (*c*) at noon on July 2nd.

It will be seen that the conditions of this invitation are designed to secure the co-operation of cargo steamers whose sea-going speed is about 10 knots or less, that is of the large number of slow-speed vessels which would run the greatest risk of capture in time of war.

The arrangements necessary to secure the support of the various shipping interests to the foregoing scheme are attended with very great difficulty, as adequate provision has to be made to protect such interests against loss.

It is impossible at present to say to what extent the scheme will be realised, and in any case the exact numbers and names of co-operating vessels will not be ascertainable until a very late date.

It follows that the merchant vessels available will probably not be sufficient in numbers to simulate the total trade to be protected, and certain war vessels will be told off to supplement them.

As a portion of these vessels will probably be destroyers with insufficient coal supply to steam from England to Gibraltar, arrangements will be made for them to coal at Arosa Bay, and in order that no international difficulty may arise it has been necessary to establish a large area off this port into which vessels of the Blue side will not be allowed to enter.

A portion of the war vessels representing trade will be sent to Arosa Bay, Gibraltar, and Falmouth before the commencement of the manœuvres and will leave at intervals, outward and homeward bound, commencing 24 hours before hostilities open, so that at the actual outbreak of war they may be fairly distributed along the trade route.

Both sides will be free to leave their defended ports at any time after noon on Sunday, 24th June.

Merchant vessels taking part in the manœuvres are to hoist the Red ensign at the fore at noon on Sunday, 24th June, if within the manœuvre area at that time, and if not, they are to hoist it as soon as they pass the limiting lines when entering.

At the conclusion of the manœuvres each fleet will return to its own base, and the specially commissioned ships will disperse to their respective Home ports.

Remarks on the general situation.

It will be seen from these instructions that the operations of the Blue side were very narrowly restricted. Practically they could be directed only against merchant vessels plying to and from Mediterranean and South Atlantic ports, and even within these limits the Blue forces were not allowed to attack the trade at the points of its greatest concentration—that is, in the immediate neighbourhood of its home ports or within the Gut of Gibraltar. Hence for practical purposes some position on the trade route between Ushant and Cape St. Vincent was designated and virtually prescribed as that which the main body of the Blue Fleet should take up in the pursuit of its purpose of preying upon British maritime commerce. Moreover, only a fraction—considerably less than 25 per cent.—of the total amount of commerce travelling the trade route within the period of the operations was really assailable by the Blue forces. The trade route was traversed by upwards of 400 vessels—either merchant steamers or warships representing merchant steamers—during the period in question. Of these only 94 in all—60 merchant steamers and 34 warships—were liable to capture or destruction, and 52 of them, or 55 per cent., were actually captured before the operations came to an end. We shall see in the sequel how these figures are to be interpreted. They are certainly not to be taken at their face value if the judgment of the Admiralty and the comments of the Chief Umpire are to be allowed any weight.

The Blue forces.

The Blue forces were composed and distributed as follows:—

At Berehaven.

The Battle Squadron under the immediate command of Vice-Admiral Sir William H. May:—

	First Division.		Second Division.
1st Sub-Div.	King Edward VII. (Flag) Royal Oak Dominion	3rd Sub-Div.	Victorious (Flag), Rear-Admiral Sir Archibald Berkeley Milne. Magnificent
2nd Sub-Div.	New Zealand Commonwealth	4th Sub-Div.	Majestic Hindustan

The Second Cruiser Squadron, under Rear-Admiral H.S.H. Prince Louis of Battenberg:—

Drake (Flag)
Black Prince
Duke of Edinburgh
Cornwall
Cumberland
Berwick
Diamond
Amethyst

The Fifth Cruiser Squadron, under Rear-Admiral E. H. Gamble, C.B.:—

Niobe (Flag)
Essex
Furious
Vindictive
Latona
Bedford
Arrogant

The Sixth Cruiser Squadron, under Captain Charlton, of the Hecla:—

Sappho
Scylla
Dryad
Circe
Leda
Skipjack
Halcyon

Torpedo-Boat Destroyers.

First Division.
1. Ranger
2. Sunfish
3. Haughty
4. Opossum

Second Division.
5. Wizard
6. Dasher
7. Hornet
8. Havock

Third Division.
9. Shark
10. Hunter
11. Rocket
12. Porcupine

Fourth Division.
13. Teazer
14. Zebra
15. Conflict

Fifth Division.
17. Lightning
18. Fervent.

The Destroyer Flotilla, under Captain Bruce, of the Blenheim:—

Sixth Division.
Charger
Salmon
Snapper
Hardy

Seventh Division.
Starfish
Swordfish
Lynx
Ferret.

The Submarine Flotilla, under the Commander of the Forth with torpedo-gunboat Hazard:—

B 3, B 5, B 7, B 8, B 9.

At Lagos.

The Destroyer Flotilla, under the Captain of the Vulcan:—

Mallard
Ariel
Banshee
Albatross
Angler.

Disposition of these forces and the achievements of isolated cruisers.

Of these several squadrons and divisions the Battle Squadron and Second and Fifth Cruiser Squadrons were told off by the Blue Commander-in-Chief to operate off the coast of Portugal in what may be called an oceanic attack on the trade. The Sixth Cruiser Squadron and all the Destroyer divisions, except that at Lagos, together with the Submarine flotilla, were left to operate nearer home with the Blue home ports as their bases. Their fate was significant, and may here be recorded, so as not to interrupt the narrative to be given hereafter of the oceanic operations. Of the Fifth Cruiser Squadron the five torpedo-gunboats were put out of action during the course of the operations without having made any captures at all. The Sappho and Scylla alone survived. The Sappho captured three merchant vessels and the Scylla seven. These two ships afford a striking illustration of the amount of damage to commerce that isolated vessels can do—so long as they are unmolested—even in waters strongly occupied by a greatly superior naval force. Their captures were all effected either at the mouth of the English Channel or within about a hundred miles south-west of Ushant. It seems probable that they managed to hit some point on the "clearly defined route," outside the ordinary trade route, which was assigned by the Red Commander-in-Chief to merchant vessels associated in groups; and their success seems to suggest that a *guerre de course* conducted by isolated ships engaged on a roving cruise is by no means out of date as yet. Between them the SAPPHO and the SCYLLA account for very nearly one-fifth, that is little less than 20 per cent., of all the captures effected by the Blue side. Both survived to the end, the SAPPHO making the first capture of the war, and very nearly the last. It must be added, however, that had the war been a real and a lasting one these two vessels would very soon have reached the end of their tether. The low enduring mobility—that is, the limited coal capacity—of the modern warship compels it to return very frequently to a base for coal. It is more than probable that when the SAPPHO and the SCYLLA reached this point they would have found the access to their base closely barred by the already victorious forces of the enemy.

The achievements of destroyers and submarines.

Of the thirty-one DESTROYERS assigned to the Blue side five stationed at Lagos and the rest in Blue home ports, eighteen, or 58 per cent., were lost in the course of the operations and only thirteen survived. Of the five destroyers at Lagos three were lost, but not before they had captured four merchant vessels, and their loss was more than counterbalanced by the loss to the Red side of four out of the five Mediterranean destroyers operating off Lagos. Of the twenty-six Blue destroyers operating from home ports fifteen were lost, but the several flotillas accounted for the capture of nine merchant vessels, while of the Red forces two cruisers and five destroyers were adjudged to have been put out of action by Blue destroyers. The SUBMARINE FLOTILLA did nothing and suffered no damage throughout the operations. Its opportunity might have come if any of the Blue ports had been blockaded by the Red side. But that phase of the operations was never reached, though it was well in sight before the manœuvres came to an end.

Reflections on these achievements.

It is a fact of no little significance that of the fifty-two merchant vessels finally captured or sunk by the Blue side, nine were captured or sunk by two cruisers operating singly, and twelve were captured or sunk by a few destroyers operating in pairs or in small groups. In other words, the *guerre de course* proper prosecuted by these insignificant vessels—for the two cruisers were unarmoured third-class cruisers—accounted for twenty-one out of fifty-two captures in all—that is, for just over 40 per cent. These figures might at first sight be taken to imply that the *guerre de course* is still best conducted in this way, and that the comparatively slow, weak, unarmoured cruiser may still, as Admiral Custance, the distinguished author of "Naval Policy" contends, have an important function to discharge in war. But before these conclusions are accepted we have to look at the operations as a whole, and to bear in mind that the time assigned to them was not sufficient to afford a complete view of the strategic conditions involved nor of the final results to which these conditions must inevitably have led. It is the recorded opinion of the chief umpire that "it is practically certain that the commencement of the third week of the war would have seen all commerce destroying ships either captured or blockaded in their defended ports." If that is so it is clear that the rate of capture maintained for a few days by the cruisers and destroyers in question must in a few days longer have fallen to zero. We have also to consider that the Red Commander-in-Chief very properly made it his chief and primary business to seek out and engage the main body of the Blue Fleet, well knowing that, as Nelson said, if the trunk was destroyed the branches would perish with it. With this task in hand he could well afford to neglect the sporadic *guerre de course* of his adversaries, in the assured confidence that as soon as his own command of the sea was firmly established the marauding vessels would very quickly be disposed of. In the opinion of the Chief Umpire this confidence was justified. It may further be doubted whether in real war the capture or destruction of merchant vessels by destroyers will be found to be as feasible as it was made to appear during the manœuvres. But this question was fully discussed in the *Naval Annual* of last year and need not here be reopened.

Plans of Blue Commander-in-Chief.

"The Blue Commander-in-Chief" says the comment of the Admiralty on the operations "was directed to carry out a plan of campaign which is generally allowed to be strategically unsound." The meaning of this seems to be that it was suggested in the "General Idea" that he would probably seek to cause a dispersion of the Red fleet, and with that object he would organize an attack on the Red trade as the best means available to tempt the Red side to divide its forces and so give him a chance of engaging a portion of it at a time. As a rule, it may be said that an inferior naval force will not take the sea unless it means to fight. It is clear that the Blue Commander-in-Chief did not mean to fight if he could help it, or unless he could encounter a detached force of the enemy over which he could gain a decisive advantage before the latter could be reinforced. It would, therefore, be strategically unsound for him to take the sea at all with his battle squadron, unless he held, as apparently he did, that the instructions of the Admiralty required him to use his whole force in an organized and simultaneous attack on the Red trade. On that assumption practically only one course was open to him—to occupy some portion of the trade route sufficiently removed from the Red bases to give him at least a chance of maintaining his position long enough to enable him to create a panic at home by the interruption and destruction of the floating trade. Such a position could not be near the entrance to the Channel, because that region was sure to be occupied in overwhelming force by the Red forces opposed to him. It must, therefore, be off the coast of the Peninsula and not south of Cape St. Vincent, because the South Atlantic trade was not to be molested south of that latitude, and Cape St. Vincent was, moreover, in the immediate neighbourhood of his protected base at Lagos. Hence, if he adopted this plan of campaign, it was practically certain that his main force would, sooner or later, be found in the occupation of the trade route off the coast of Portugal. He did adopt this plan, and, viewing the situation as he did, it may be conceded, with the Admiralty that "he achieved his mission with great ability." It is, however, as the same authority points out, "open to question whether he might not have achieved a greater measure of success by the employment of his cruisers only for the *guerre de course*, and the concentration of his battleships for attacks upon the line of the Red Admiral's communications."

Their development and execution.

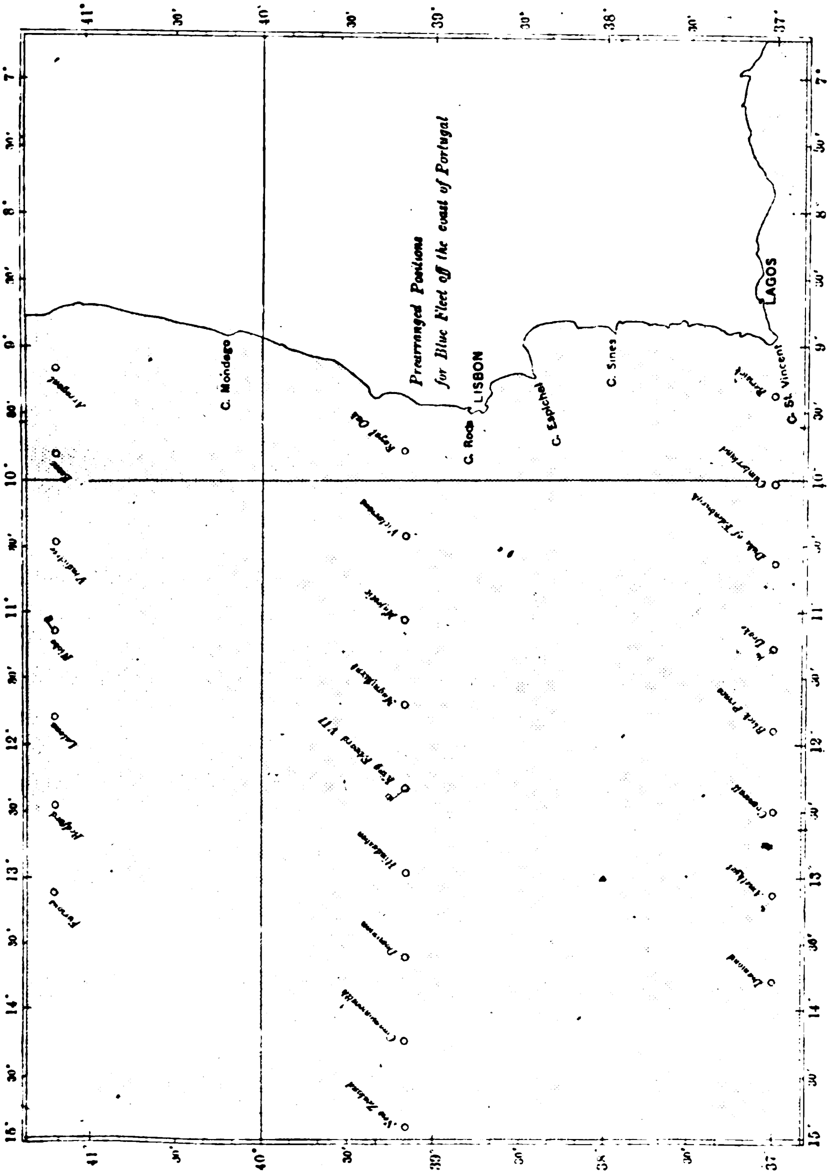
Having determined on the position he would occupy, the problem for the Blue Admiral was to get there and to stay there. The first part of the problem was solved easily enough, but the second part, as might have been expected, proved insoluble. The operations began at noon on Sunday, June 24. At that hour the BLUE BATTLE SQUADRON, the SECOND CRUISER SQUADRON, and the FIFTH CRUISER SQUADRON all left Bantry Bay together and steered on prescribed courses so arranged as to take them, if possible, beyond the range of the Red cruisers which might be expected to be on the look out for them, and to bring them all to their prescribed stations off the coast of Portugal, more or less simultaneously, on the morning of Wednesday, June 27. To the SECOND CRUISER SQUADRON was assigned the highest speed, and for that reason the most easterly course and the southernmost station off the coast of Portugal. More to the westward the BATTLE SQUADRON proceeded in like fashion, and still more to the westward the FIFTH CRUISER SQUADRON, speeds being adjusted to the requirement of simultaneous arrival on the appointed station and intervals between the ships to the prescribed distance at which the several ships of each squadron were to be apart when their respective stations were reached. These stations and the positions of the ships occupying them are indicated on the plan.

Reflections on this plan.

Now, regarded in the abstract as a means for the interception and destruction of floating commerce, nothing could be better than this disposition. It spread a net through which no merchant vessel could pass without being detected in ordinary weather, because if any one line was passed in the night the next, which was about 130 miles distant, must be passed in the daytime. It permitted of rapid concentration by one line or another if the merchant vessels were accompanied by warships, and though it exposed the battleship line to some risk of being overpowered in detail before they could be effectively concentrated for action, yet it placed a screen of cruisers so far ahead and astern of this line as to render such a risk almost infinitesimal in these days of wireless telegraphy. But, regarded in the concrete, the disposition is open to the fatal criticism that it must forthwith be dislocated and broken up as soon as the enemy appears in force. If the proof of the pudding is in the eating, this criticism is conclusive and final. It was not until the morning of June 27 that the ships were all in their stations. Before dark on that same day scarcely one of them remained there. The BATTLE SQUADRON was partly concentrated and partly captured or dispersed. The FIFTH CRUISER SQUADRON was flying in all directions. The SECOND CRUISER SQUADRON was steaming as hard as it could for Lagos. It hardly seems worth while to spend nearly three days' coal in reaching a station which has to be abandoned in a little over twelve hours.

Reflections continued and alternatives considered.

In making this ill-fated disposition the Blue Commander-in-Chief was no doubt largely influenced by the instructions he had received from the Admiralty, which were in effect—as defined by the correspondent of *The Times* attached to the Blue side—"to endeavour to use his fleets, as a real enemy would in like circumstances, for the purpose of causing a commercial crisis in England, by the destruction rather than the capture of British merchant steamers, with a view to employing his fleets to advantage at a later stage if this measure had the desired effect of causing any dispersal of the British forces." But if this was his purpose it was not fulfilled. The dispositions made off the coast of Portugal were very ineffectual for the destruction of commerce, as may be seen from the list of captures, and very disastrous to the ships and squadrons taking part in them. Nor had they any appreciable effect in causing a dispersal of the British forces. Hence there is no little force in the suggestion of the Admiralty that the Blue Commander-in-Chief might have "achieved a greater measure of success by the employment of his cruisers only for the *guerre de course* and the concentration of his battleships for attacks upon the Red Admiral's communications." Now the main line of Red com-


Prearranged Positions
for Blue Fleet off the coast of Portugal
C. Mondego
LISBON
C. Roca
C. Espichel
C. Sines
LAGOS
C. St. Vincent
Royal Oak
Majestic
Magnificent
King Edward VII
Hindustan
Dominion
Commonwealth
New Zealand
Duke of Edinburgh
Cumberland
Black Prince
Cornwall
41°
40°
39°
38°
37°
7°
8°
9°
10°
11°
12°
13°
14°
15°

munication was that which connected the *Mediterranean Fleet* at Gibraltar with the main body of the Red forces in Home waters. The Red Admiral was warned not to be tempted to disperse his forces, and so far as his forces were dispersed by the detachment of the *Mediterranean Fleet* his natural impulse would be to concentrate them as soon as possible. The *Mediterranean Fleet* had seven battleships of the *Formidable* class. The Blue Fleet had nine battleships, including five of the KING EDWARD class. Thus the *Mediterranean Fleet* was isolated, weak, and, as will presently be seen, deprived of the advantage of moving on interior lines. The Red Commander-in-Chief could not reinforce it without dispersing his own forces, so that his only way of succouring the *Mediterranean Fleet*, which was really in the air if it took the sea at all, would be to effect a junction with it. It would seem to have been well within the power of the Blue Admiral to forestall this junction—in other words, to attack the Red Admiral's communications with very material effect. Cape Finisterre is some 520 miles from Bantry Bay, a distance of 37 hours' steaming at 14 knots, which is a speed well within the steaming power of all three battleship squadrons, but probably the practical limit of it so long as they remained undivided. Milford Haven, where the Red battleships lay, is some 38 miles further from the same point, a distance of over 39½ hours' steaming at 14 knots. From Gibraltar to Cape Finisterre is some 540 miles, a distance of nearly 39 hours' steaming at 14 knots.

What the Blue Admiral might have done.

It results from these figures that had the Blue Admiral carried his battleships direct from Bantry Bay to Cape Finisterre at 14 knots, he would have reached the critical point well before either the main Red Fleet or the *Mediterranean Fleet* could have got there steaming at the same speed. It is true that had the *Mediterranean Fleet* been able to steam at 15 knots or over it would have passed the critical point before the Blue Fleet got there. But by a judicious use of cruisers, despatched ahead of the battle squadron, the Blue Admiral might have got wind of this in time to intercept the *Mediterranean Fleet* north of Cape Finisterre, and a similar expedient would have given him warning if the main Red Fleet was also in the neighbourhood. In any case a junction of the two Red battle squadrons before the Blue Admiral was in a position to intercept the weaker of them was in reality a very remote contingency. It might almost be taken for granted, on the one hand, that the Red Admiral would not uncover the approaches to the Channel until he had made certain that the main body of the Blue forces was well to the southward of him; and on the other the Blue Admiral could not fail to take into account the fact that if the *Mediterranean Fleet* had left Gibraltar at noon on

June 24, and steamed at 15 knots, it must either have passed Cape St. Vincent, distant 180 miles from Gibraltar, about midnight, and there run the gauntlet of the five Blue destroyers stationed at Lagos, or else made a wide *détour* to the westward in order to avoid them. Thus the junction of the two Red Fleets somewhere to the northward of Cape Finisterre was a contingency which the Blue Admiral could well have afforded to neglect, and even if it had been effected he could probably have got wind of it by means of his cruisers in time to double back and occupy the approaches to the Channel with the bulk of the Red forces well astern of him. As matters turned out such dispositions as are here suggested would have been perfectly successful, for on the first day of the operations the Red Admiral never went further with his battleships than a rendezvous in lat. 50° 10′ N., long. 8° 55′ W., and remained there in wireless touch with Scilly until the following afternoon, while the *Mediterranean Battle Fleet* remained at Gibraltar until 24 hours after the operations began, and then steamed homewards at no more than 11 knots so as to pass Cape St. Vincent in daylight. This being so, it is clear that the Blue Admiral would have had time, had he been so inclined, to assume the commerce-destroying disposition which he actually did adopt before coming into collision with any large force of the enemy. But with cruisers disposed ahead of him during his advance from Cape Finisterre to the southward, he might make certain of being warned of the advance of the *Mediterranean Fleet* in time to make his dispositions for attacking it. As matters turned out, according to the plan actually adopted, the *Mediterranean Fleet* had passed Cape St. Vincent before the SECOND CRUISER SQUADRON had taken up its appointed station there, with the result that the eastern wing of the Blue battleship squadron was taken altogether unawares, and was driven to the northward before the Blue Commander-in-Chief could concentrate his force for the purpose of attacking its assailants. It would seem then that had the Blue Commander-in-Chief adopted the plan of campaign above suggested, he would have lost no advantage which the plan he did adopt could have afforded him in the most favourable circumstances, and might have secured the immense additional advantage of destroying the *Mediterranean Fleet* before it could be reinforced. His own battleships must have suffered severely in the encounter, and perhaps have been rendered incapable of any further offensive operations. But that is only what the inferior naval force must expect, and the cruisers, or many of them, would still have survived for the further prosecution of a sporadic *guerre de course.* To the *guerre de course* proper the Blue battleships contributed little or nothing, although the Blue Admiral resolved to employ them primarily for no other purpose. Their total bag consisted of a single merchant ship, captured by the **Majestic.** It is true that the **King Edward VII.** and three of her consorts destroyed four other vessels later, but that was two days after the special organisation for the destruction of commerce had been broken up.

The Red forces.

It is now time to consider the proceedings of the Red side, which was composed and distributed at the outset as follows:—

At Milford Haven.

The Channel Battle Squadron.

The Channel Battle Squadron, under the immediate command of Admiral Sir Arthur K. Wilson (Commander-in-Chief), organised as follows:—

First Division.

1st Sub-Div.
- *Exmouth* (Flag of Commander-in-Chief)
- *Vengeance*
- *Canopus*
- *Glory*

2nd Sub-Div.
- *Albemarle* (Flag of Rear-Admiral Robert L. Groome).
- *Triumph*
- *Ocean*

Second Division.

3rd Sub-Div.
- *Cæsar* (Flag of Vice-Admiral the Hon. Sir Assheton G. Curzon-Howe, 2nd in command).
- *Jupiter*
- *Goliath.*

4th Sub-Div.
- *Russell*
- *Prince George*
- *Illustrious.*

Fifth Cruiser Squadron.

Hawke (Flag of Rear-Admiral Charles H. Adair).
Endymion
Gladiator
Edgar
Theseus
St. George.

Special Service Cruisers.

Dido
Æolus
Thetis
Topaze.

Sapphire and Destroyers.

Sapphire (Flag of Rear-Admiral A. L. Winsloe).
Garry
Flirt
Peterel
Kangaroo
Fawn
Nith
Ure
Ness
Wear
Swale
Liffey
Itchen
Arun
Moy
Ouse
Greyhound
Racehorse
Foyle
Arab
Cheerful.

Special Service Ships.

Tyne
Aquarius.

At Devonport.

First Cruiser Squadron.

Good Hope (Flag of Rear-Admiral George Neville)
Roxburgh
Hampshire
Argyll
Antrim
Devonshire.

Fourth Cruiser Squadron.

Euryalus (Flag of Admiral Sir Day H. Bosanquet, Commander-in-Chief)
Hogue
Sutlej
Aboukir
Bacchante
Cressy.

At Falmouth.

Sixth Cruiser Squadron.

Terrible (Flag of Rear-Admiral Charles H. Cross)
Spartiate
Andromeda
Royal Arthur
Grafton
Highflyer
Doris.

Scouts.

Pathfinder
Patrol
Adventure
Attentive
Forward
Foresight
Sentinel
Skirmisher.

Special Service Cruisers.

Sirius
Hermione
Charybdis.

Destroyers.

Earnest
Lively
Orwell
Crane
Roebuck
Ribble
Doon
Boyne
Derwent

At Portland.

Destroyers.

Exe
Sprightly
Thrasher
Seal.

At Gibraltar.

Mediterranean Fleet.

The Mediterranean Fleet, under the immediate command of Admiral Lord Charles Beresford, Commander-in-Chief;—

Mediterranean Battle Squadron.

First Division.
Bulwark (Flag of Commander-in-Chief)
London
Irresistible
Queen.

Second Division.
Formidable
Implacable
Venerable.

Third Cruiser Squadron.

Leviathan (Flag of Rear-Admiral Hon. Sir Hedworth Lambton)
Suffolk
Lancaster
Carnarvon.

Special Service Cruisers.

Minerva
Venus
Diana
Barham (*Depôt Ship*).

Destroyers.

Foam
Ardent
Boxer
Bruizer
Dragon.

Their initial disposition and its purpose.

On the first day of the operations elaborate dispositions were made by the Red Admiral for the purpose of discovering the whereabouts and presumed intentions of the Blue forces and at the same time of occupying the northern field of operations in such force that no attempt on commerce could be prosecuted in that region by the Blue forces with much prospect of success. Space is wanting to describe these operations in detail but, their general purpose is expounded in the official narrative as follows:—

> The object of the plan of operations ... was to cover as much ground as possible, so as to discover any enemy making for the northern part of the trade route, or taking the direct route south unless at a very high speed.
>
> The line of observation taken up was intended to cover as much ground as possible consistently with keeping the ships under wireless control, while the Commander-in-Chief remained with the Battle Fleet in wireless communication with Scilly. Moreover, the possibility of the enemy attacking any part of this line with his whole force had to be kept in view, so the two armoured cruiser squadrons (First and Fourth Cruiser Squadrons) were kept concentrated and so placed that, from whatever direction the enemy came, the unarmoured cruisers forming the Sixth Cruiser Squadron could fall back on one of them.

The first phase of the Red Admiral's proceedings.

Similar considerations of space make it impossible to describe in any detail the dispositions and movements of the Red forces from the time that they left their respective ports at the beginning of the operations until the morning of June 27, the critical and decisive day of the manœuvres. It must suffice to say that the *Pathfinder* sighted the MAJESTIC in the forenoon of June 25 and though chased by the MAJESTIC for a time the *Pathfinder* managed to discover the course and speed of her adversary—and therefore presumably of the whole Blue battle squadron—before retiring to communicate her discovery to the Red Commander-in-Chief. Similar and corroborative information having reached him from other quarters, the Red Admiral decided in the afternoon of June 25 to make a sweep to the southward. Whether he was well advised in taking all his battleships with him on this enterprise is a question which must be left to the acknowledged masters of strategy—of whom Sir Arthur Wilson is, by common consent, himself one of the chief—to decide. By taking the whole of his battleships with him he ran the risk of uncovering the approaches to the Channel to any of the Blue battleships which could manage to get behind him; and as five of the latter were, as was shown in the sequel, appreciably faster than the fastest of his own it was certain that if they once got the start they would never be overtaken. On the other hand, had he left six of his battleships at or near his original rendezvous a Blue raid upon the Channel would have been prevented, and any Blue battleships which got behind him to the northward might have been caught between two fires. These considerations seem so obvious that there must have been very strong reasons why they did not affect the Red Admiral's strategy; but whatever those reasons may have been they are not disclosed in the official narrative.

The proceedings of June 27. Break-up of the Blue organisation.

However, we have now to consider the events of June 27, which gave the deathblow to the organised attack on commerce devised by the Blue Commander-in-Chief. By the early morning of of that day the three Blue lines were in position off the coast of Portugal. But they did not long remain unmolested. The battleship line and the cruiser line to the northward were attacked almost simultaneously. The cruiser line to the southward was not molested at all, but it was none the less disorganised by what happened to the other lines. At 8 a.m. a Blue cruiser was sighted by the *Fourth Cruiser Squadron,* and was shortly afterwards identified as the BEDFORD which was the westernmost ship but one of the northern cruiser line. She was immediately chased by the bulk of the *Fourth Cruiser Squadron,* but ultimately made her escape. In the same forenoon, but an hour or two later, the LATONA, the next inshore ship to the BEDFORD, was sighted by the *Spartiate* of the *Sixth Cruiser Squadron,* and being chased was promptly put out of action. The BEDFORD led her pursuers towards the station of the Blue Admiral's flagship, hoping thereby to obtain the protection of the Blue battleship line. In this she succeeded. At 9.30 a.m. the VICTORIOUS, the second inshore ship of the Blue battleship line, sighted seven of the enemy's battleships and four of his cruisers, the southward. These proved to be the *Mediterranean Fleet* and the *Third Cruiser Squadron,* which subsequently chased the VICTORIOUS and the ROYAL OAK, her next in line in shore, and drove them to the northward into the clutches of the *Red Battle Fleet* to which they surrendered before nightfall, together with the VINDICTIVE, the third inshore ship of the northern cruiser line, which had joined them. Shortly after this surrender the junction of the *Red Battle Fleet* with the *Mediterranean Fleet* was effected. These were the most decisive incidents of the day. Others must be passed over altogether or mentioned only incidentally. The NIOBE, the flagship of the FOURTH CRUISER SQUADRON occupying the northern cruiser line, was chased by the *Terrible,* flagship of the *Sixth Cruiser Squadron* and put out of action before midnight, the *Terrible* being also put out of action by the senior officer present, but ultimately adjudged by the umpires only to have been severely damaged in armament and speed. Thus of the northern cruiser line out of seven ships three were put out of action, a fourth chased back on her supports, while the remainder were left to their own devices, for in the course of the afternoon the Blue Commander-in-Chief ordered such as remained of them to act independently. Two of the Blue battleships were also driven out of touch with their consorts and ultimately compelled to surrender to the main Red Fleet. It remains to consider the effect of these reverses on the BLUE BATTLESHIP and SECOND CRUISER SQUADRONS.

Further development of the attack on the Blue position.

It was an obvious defect of the Blue plan of campaign that if the *Mediterranean Fleet* had passed the latitude of Cape St. Vincent—as it was more than probable that it would—before the southern Blue cruiser line had reached its position there, the Blue battleships spread at a distance of thirty miles apart, on a line 130 miles to the northward of Cape St. Vincent, might run a grave risk of being overpowered in detail before the fleet could be concentrated. This is exactly what happened. The *Mediterranean Fleet* passed Cape St. Vincent at a distance of 35 miles during the forenoon of June 26. The SECOND CRUISER SQUADRON did not reach that position before the early morning of the 27th. Had the *Mediterranean Fleet* continued at the same speed it would also have passed the position assigned to the Blue battleship line before it was occupied. But as if he had divined exactly what the Blue dispositions would be, the Red Commander-in-Chief had ordered the *Mediterranean Fleet* not to pass the 38th parallel—which was about midway between the Blue battleship and southern cruiser lines—before 4.0 a.m. on the 27th. Thus the *Mediterranean Fleet* escaped the net specially spread for it and completely turned the tables on its adversary. By the time the Blue Admiral heard of the appearance of the *Mediterranean Fleet* within his lines it was too late for him to concentrate and engage it. He accordingly began to concentrate to the northward on the line of advance of the BEDFORD, in order to rescue her from her pursuers, thus leaving the eastern end of his line to its fate. Subsequently, having rescued the BEDFORD, and chased her pursuers away, he ordered the five battleships of the KING EDWARD class to concentrate at a new rendezvous to the southward of his original station, whither he had summoned three cruisers from the southern line, DRAKE, BLACK PRINCE, and DUKE OF EDINBURGH, in the hope—surely a vain one—"that in steaming to the southward the BATTLE FLEET would lure the ships of the *Fourth Cruiser Squadron* they had recently chased on to the armoured cruisers of the southern line." This hope was not fulfilled, and the three cruisers summoned from the southern line no sooner reached the rendezvous at 9.30 p.m. than they were ordered to go to Lagos to coal as quickly as possible, summoning their consorts of the southern line to the same destination by the way. It must be acknowledged that this summoning of the DRAKE and her consorts to the northward was rather an aimless, and, as it turned out, quite a fruitless proceeding. It delayed the coaling of the SECOND CRUISER SQUADRON at Lagos by at least twelve hours, for when he received the summons to the northward the Rear Admiral was just about to ask permission from the Blue Commander-in-Chief to take his squadron into Lagos at once. It is probable that this delay brought about the discomfiture of the SECOND CRUISER SQUADRON shortly after it left Lagos on the 29th.

Dispositions of the Blue Admiral after the break up of his line.

Having despatched the SECOND CRUISER SQUADRON to Lagos, the Blue Commander-in-Chief, with the battleships in company, including all the ships of the KING EDWARD class, together with the MAGNIFICENT, now made for a rendezvous fifty miles off Cape Roca. The MAJESTIC, which was left isolated, was first given the same rendezvous, but before midnight both she and the MAGNIFICENT were ordered to make a good westing and go north to attack the trade routes in the chops of the English and St. George's Channels, using Berehaven as a base. It does not appear that they effected any further captures. The result of the day's work was that the northern cruiser line had been completely broken up, and the survivors of it were scattered in independent action; the battleship line had lost two of its number and detached two others on an errand on which they accomplished nothing, while the survivors were soon to encounter the enemy in very superior force, and only to avoid an action with them by virtue of their superior speed; the southern cruiser line was in full retreat for Lagos, being already inconveniently short of coal. On its issue from Lagos it was very speedily broken up, five ships being put out of action and the rest dispersed. This had not been accomplished without some losses by the Red side, but its remaining preponderance was overwhelming and the surviving Blue battleships were fugitives.

Further results of the day and further proceedings of the Second Cruiser Squadron.

It would be an endless task to follow the fortunes, adventures, and achievements of the now scattered remnants of the Blue side, but it may be mentioned here that the ESSEX, the second ship from the eastward of the northern cruiser line, was disabled by a gun accident on June 27, and was sent home disabled. Thus of the northern cruiser line only the FURIOUS and the ARROGANT, the two wing ships, survived, and their further performances were insignificant. The FURIOUS did nothing, and the ARROGANT captured two more merchant vessels, one with the assistance of the HAUGHTY. It must suffice to record the further proceedings of the two remaining organised forces of the Blue side—namely, the five fast battleships of the KING EDWARD class, which, on the morning of June 28, were seeking to extricate themselves from the trammels with which the Red Admiral had by this time surrounded them, and the SECOND CRUISER SQUADRON which, on the same day, was coaling at Lagos. The latter may be taken first. The Squadron remained coaling at Lagos on June 28, and left that port in the forenoon of June 29, leaving the DIAMOND, which had not finished coaling, behind, with orders either to join later or to act independently as circumstances might determine. The orders of the Blue Admiral to the Rear-Admiral in command of the SECOND CRUISER SQUADRON were to remain on the trade route in the neighbourhood of Cape St. Vincent as long as possible, and then work gradually northward, acting according to circumstances. But these orders proved impossible of execution, for on June 28 the Red Admiral, now in full pursuit of what remained of the Blue battle fleet, had detached the *First* and *Fifth Cruiser Squadrons* to the southward with orders to look out for the SECOND CRUISER SQUADRON, believed to be in the neighbourhood of Cape St. Vincent, and to engage it if a favourable opportunity offered, or in any case to endeavour to drive it towards the line of advance of the *Mediterranean Fleet*, which had also been ordered to return to the southward. The Red Admiral kept with his flag a sufficiency of cruisers to enable him to keep touch with the fugitive Blue battleships; but in addition to the *First* and *Fifth Cruiser Squadrons*, he despatched as many other cruisers as he could spare to assist in the rounding up of the SECOND CRUISER SQUADRON. These dispositions proved in large measure successful, and they resulted in the most interesting and the most important action which took place during the operations.

Cruiser action of June 29.

The details of this action must be studied in the official report, being there illustrated by two very instructive diagrams. Here it must suffice to say that the SECOND CRUISER SQUADRON came into collision with the enemy shortly after it left Lagos and almost before it had cleared Cape St. Vincent. The action that ensued consisted of two distinct phases, and was on the whole favourable to the SECOND CRUISER SQUADRON; for, whereas the latter lost only two ships, the BERWICK and the AMETHYST, four ships of the enemy, *Antrim, Devonshire, Theseus* and *Edgar*, were adjudged to be out of action. The Rear Admiral in command of the SECOND CRUISER SQUADRON did not attempt to make the action a close or a general one, being anxious rather to get a good offing, and by means of his superior speed to show a clean pair of heels to the surviving, but still superior, forces of the enemy. In this he very nearly succeeded. Although hampered by boiler and engine-room troubles in the BLACK PRINCE and the CORNWALL, which were consequently ordered to sheer out of line and save themselves if they could, his speed was sufficient to keep the pursuing enemy out of range astern, but not to give him such freedom of movement as would enable him to alter course, if necessary, athwart the latter's line of advance. Probably he might have made good his escape during the night had he encountered no other ships of the enemy. But long before nightfall the *Formidable*, a battleship of the *Mediterranean Fleet*, was sighted in such a position that the DRAKE and her surviving consorts, the DUKE OF EDINBURGH and CUMBERLAND, could not pass her out of range. The two latter ships were so disposed as to be covered by the DRAKE, and accessible only at very long range from the *Formidable*. But the latter opened fire, unperceived by the DRAKE, at a range of 9000 yards, and, after the prescribed interval, claimed to have put the DRAKE out of action. This claim was acknowledged, and after telling the DUKE OF EDINBURGH and CUMBERLAND to save themselves if they could, the DRAKE shaped a course for home, taking no further part in the operations. It only remains to say that the BLACK PRINCE, which had been ordered to keep away to starboard and rendezvous off Cape Villano, soon fell into the clutches of the *Third Cruiser Squadron* attached to the *Mediterranean Fleet*, and was promptly put out of action after doing her best to lure her assailants away from the position and course of the DRAKE. Before this the CORNWALL, which had also dropped out of line, had been put out of action by the *Hawke* and *St. George*. Thus of the *Second Cruiser Squadron* only the DIAMOND, DUKE OF EDINBURGH, and CUMBERLAND survived on the evening of July 29. They remained at large and acting independently until the close of the operations. But the DIAMOND only accounted for one merchant vessel captured and the CUMBERLAND for two. The DUKE OF EDINBURGH accounted for none at all.*

Flight and pursuit of the Blue battleships.

We have now reached a point at which the only organised force remaining to the Blue side was the five battleships of the KING EDWARD class, including the flagship of the Blue Commander-in-Chief, which by the morning of June 28 were being hard put to it to avoid being brought to action by the very superior force which the Red Commander-in-Chief had at hand for the purpose. They were only saved by their speed. Early in the morning of June 28 the Red Admiral had ascertained the position of the Blue battleships, which were then some 60 miles off the mouth of the Tagus, and steered at first so as to cut them off from their base at Lagos. But at 9 a.m. he sighted them, and, after several doublings and windings, the Blue Fleet finally headed to the northwards, steering a course for Ushant. The Red Admiral at once organised a chase, which was not abandoned until the Blue battleships had passed the Casquets, and were still steering up Channel; the reason for abandoning the chase at this point being that, in the opinion of the Red Commander-in-Chief, "it was clear that if the enemy continued up Channel after passing his base at the Channel Islands he could do no harm." In organising this chase the Red Admiral still kept in mind the business of accounting for any of the Blue forces that might still remain at large to the southward, and committed this task, as we have seen, to the *Mediterranean Fleet,* and the cruisers which broke up the SECOND CRUISER SQUADRON on June 29. The details of the chase need not be described at length. It must suffice to say that the cruisers told off to keep touch with the fugitive Blue battleships never relaxed their hold, though one of them, the *Hogue,* venturing too near the chase, was put out of action, and only abandoned it under orders off the Casquets when they put into Portland to coal. The Red battleships followed astern as fast as they could, but tailed off greatly in the process—the speed maintained by the Blue battleships being 17 knots, while that of the fastest of the Red did not exceed 15½ to 16 and somewhat over—so that when off Ushant, in the forenoon of June 30, the Red Commander-in-Chief practically abandoned the chase, so far as his battleships were concerned, by reducing his speed to 12 knots, in order to hasten the collection of more of his battleships. At noon on that day the situation was as follows: "The BLUE BATTLE SQUADRON were some 20 miles to the westward of the Casquets, closely dogged by the *Aboukir* and *Andromeda,* while the *Exmouth, Triumph, Vengeance,* and *Albemarle* were in company about 40 miles astern. Of the remaining battleships which had followed the chase the *Russell* was about 30 miles astern of the *Exmouth,* and the *Ocean* about 45 miles to the westward of Ushant." The *Canopus* took no part in the chase. She had previously lost touch with the Red Fleet, and been ordered, by wireless, to join the *Mediterranean Fleet.* On the morning of the 28th, the *Cæsar, Jupiter, Illustrious,* and *Prince George* were detached under the command of the Vice-Admiral, and ordered to sweep the trade-route from Cape Finisterre to the southward, forming a line eight miles apart. Thus the whole of the trade-route off the coast of the Peninsula was patrolled by the *Mediterranean Fleet* and by the second division of the main Red Fleet until the operations came to an end. The proceedings of the *Glory* and *Goliath,* the only remaining battleships of the main Red Fleet, are recorded below.

---

* A few words must here be said by way of personal explanation on an incident which occurred during the DRAKE's passage home after she had been put out of action. It is recorded as follows in the official report under date July 1:—

"At 4 p.m. a message from the DRAKE (out of action) for *The Times* newspaper was intercepted by the [Red] Commander-in-Chief, which gave information with brief particulars that the Blue cruisers, DRAKE, BERWICK, BLACK PRINCE, and AMETHYST, had all been placed out of action off Cape St. Vincent. This intelligence removed all anxiety from the Commander-in-Chief's mind as to the chance of falling in with an organised force of hostile armoured cruisers, and made it practically certain that any ships fallen in with would be scattered, and acting independently without a leader."

As this message was sent by the present writer, he desires to state that its actual text began with the words, "The Rear-Admiral permits me to inform you, etc." Without seeking to shelter himself under the authority of the Rear-Admiral, he would point out that in default of such authority the message could not have been sent, nor would he have attempted to send it. He would add further that had he realised at the time that, the operations not yet being at an end, the message might be intercepted by the Red Admiral, and might give him useful information, he would not have asked the leave of the Rear-Admiral to send it. There was a precedent for what he did, but not quite an exact one. In the manœuvres of 1901 the same correspondent despatched a wireless message to *The Times* from the Revenge, the flagship of Rear-Admiral (now Admiral) Sir Gerard Noel, then in command of the Reserve Fleet. That message also began, "The Rear-Admiral permits me to inform you, etc.," and it was on the strength of this precedent that permission was given to send the message of July 1. There was, however, this difference. In 1901 the operations were at an end when the message was sent, whereas in 1906 they were not. The full extent and import of this difference was not realised at the time by the sender of the message, and perhaps not by the Rear-Admiral who permitted it to be sent.

The Blue Admiral claims command of the Channel.

The fugitive Blue battleships were only four in company when they passed the Casquets. These were KING EDWARD VII., DOMINION, COMMONWEALTH, and HINDUSTAN. On the evening of June 28 the NEW ZEALAND had begun to drop astern and was accordingly ordered to haul out to westward as soon as it was dark and proceed to Berehaven. This proceeding was at once noticed by the pursuing Red cruisers and reported to the Red Commander-in-Chief, who ordered the *Glory* and *Goliath*, his two rear ships, to go after her and try to cut her off. They did not succeed in this and became separated in the attempt, but afterwards came together again, when they abandoned the search, although, if they had but known it, the NEW ZEALAND was only a few miles out of sight to the westward of them. Thenceforward they directed their course so as to rejoin the Flag. The remaining Blue battleships continued their flight to the northward and came into wireless touch with Alderney early in the morning of June 30. Here their ostensible purpose was disclosed to all the world in a fashion which is recorded as follows in the official report:—

> At 6.0 a.m., with a view to creating a commercial crisis, the Commander-in-Chief (Blue) sent the following telegram to H.M. the King, the Prime Minister, Admiralty, Commanders-in-Chief Home Ports, and Mayors of Seaport Towns (by wireless telegraphy to Alderney for transmission by postal telegraph):—
>
> "The enemy, Blue Fleet, is now in command of the Channel and demand an indemnity. If any attempt is made to destroy any of the Blue Fleet by torpedo from destroyer, torpedo boat or submarine or by mines, whilst the Blue Fleet is in the Channel or off the coast, I shall destroy the undefended ports on the English coast, and I shall hold you responsible if there is any damage done. As a pledge on my part I shall be off one of the undefended ports with four of the Blue Fleet battleships this afternoon, and unless I see a flag of truce flying in a conspicuous place as pledge on your part that you accept my conditions, I shall bombard the town and hold you responsible. The amount of the indemnity to be settled later."

Examination of this claim.

The triumphant tone of this message seems to be little in accord with the hard facts of the situation. The Blue Commander-in-Chief had suffered overwhelming discomfiture. His whole plan for an organised attack on the enemy's commerce had been shattered to pieces within twelve hours of its being put in operation. Two of his battleships had been put out of action, three others had been separated from his flag and reduced by the stress of war to isolated action, from which next to nothing resulted during the remainder of the operations. His two cruiser squadrons had been broken up and reduced to a few scattered and fugitive remnants. He himself with what remained to him of his fleet had been a fugitive for forty-eight hours and had only saved himself by running away as fast as he could. Even now he dared not turn to face his pursuers and could only continue his flight in a direction in which his enemy thought he could do so little harm that he, the enemy, did not trouble himself to pursue him. Yet such being his real plight he claimed to be in command of the Channel. As well might Medina-Sidonia have claimed to be in command of the North Sea when, having been pushed by Drake and Howard beyond the Firth of Forth, the latter abandoned all further pursuit as a work of supererogation. From a strategic point of view such a claim was surely illusory—as may safely be inferred from the indifference with which it was treated by that consummate strategist the Red Commander-in-Chief. Even from a political point of view it seems very unlikely that a commercial crisis could be created either by advancing such a claim or by such aggressive action, if any, as alone was possible to the Blue Admiral in the circumstances. He dared not, and showed that he dared not, turn back and engage the pursuing fleet in his rear. He could only continue to fly before it so long as it thought it worth its while to pursue him. For the same reason he could not possibly stay to engage in the bombardment of coast towns, whether defended or undefended, because that is a business which requires time for its execution, and involves the expenditure of more ammunition than he could possibly spare if there was the remotest chance of his having to fight an action with a superior force in the sequel. In truth, the best explanation of the whole proceeding seems to be that the Blue Admiral was deliberately playing a game of bluff, believing, rightly or wrongly, that this was what the Admiralty expected him to do in the circumstances. This explanation was suggested by more than one correspondent at the time, and the action taken by the Red Commander-in-Chief seems to confirm it.

Final phase of the operations.

If this view of the situation is a sound one, it is unnecessary to follow in any detail the proceedings of the Blue Admiral from the time when his adversary abandoned the pursuit, on the ground that, having once passed their base in the Channel Islands, the fugitive Blue battleships could do no further harm. Apparently for the same reason no attempt was made to molest them, either with torpedo craft or with submarines during their further progress up the Channel and into the North Sea. The Red Admiral would not allow himself to be tempted to take part in a game of make-believe, which was devoid of all actuality and was only constructively in the programme by virtue of the Firth of Forth having been assigned to the Blue side as a defended port. The area within which maritime commerce could be assailed was bounded by a line drawn from Ushant to the Lizard, and having chased the only organised force remaining to the Blue side beyond that line into a region where no further attacks on the trade were permitted, the Red Admiral evidently held that to chase it any further would be a mere waste of time and coal, and a neglect of such opportunities as still remained to him of protecting the trade against the assaults of the scattered units of the Blue Armada which still remained at large. Acting on this view of the situation, as soon as the Blue battleships had passed to the eastward of the Casquets "the Red Commander-in-Chief altered course for Portland, his intention being to coal the ships with him as rapidly as possible, to collect as many ships as he could, and to return to the Atlantic with a view to intercepting any of the Blue Fleet, which might still be at large, either being driven northwards or coming on their way to a Home port to coal." This was the last phase of the operations, and its details may be studied in the official report.

Conclusion.

It remains to give the results of the campaign as tabulated in the official "Summary of Red and Blue Losses," and then to quote the comments of the Admiralty and the remarks of the Chief Umpire. The comparative losses of the two sides are given in the following table:—

Class of Ship.	Red.				Blue.			
	No. at commencement of hostilities.	Losses.	Remaining.	Per Cent. Lost.	No. at commencement of hostilities.	Losses.	Remaining.	Per Cent. Lost.
Battleships	20	·9	19·1	4·5	9	2	7	22·2
Armoured Cruisers ..	19	4	15	21·0	7	4	3	57·1
Other Cruisers	24	8	16	33·3	10	4	6	40·0
Scouts	8	Nil	8	Nil	Nil	—	—	—
Torpedo gunboats ..	Nil	—	—	—	5	5	Nil	100
Destroyers	41	13	28	31·7	31	18	13	58·0

These figures speak for themselves, and, viewed in the light of the strategic situation as it existed at the close of the operations, they fully confirm the judgment of the Chief Umpire quoted below. The official comments also speak for themselves; the only remark to be made on them is that the destruction of commerce in the face of a hostile command of the sea would probably be found in actual war to be a much more difficult business than the manœuvres made it appear. If that is so, it would seem that the risks involved are not likely to be greater than could be covered by insurance, if only owners and underwriters can be induced to keep their heads.

ADMIRALTY REMARKS.

The manœuvres were deprived of much of their value owing to the small proportion of merchant vessels which accepted the Admiralty terms for taking part.

The percentage of loss of merchant vessels was high (55 per cent.) and would appear alarming were it not for the fact that this success of Blue was only achieved at the expense of the complete disorganisation of his fighting forces, and that, as stated by Chief Umpire, had hostilities continued "it is practically certain that the commencement of the third week of the war would have seen all commerce-destroying ships either captured or blockaded in their defended ports."

It is probable also that the percentage of loss would have been very considerably lower had it been possible for all the merchant ships traversing the manœuvre area, to the number of upwards of 400, to take a part in the proceedings; as it was, the attack of the 27 battleships and cruisers and 30 destroyers of the Blue Fleet was concentrated upon the inadequate number of 60 merchant steamers and 34 gunboats and destroyers representing merchant steamers; in consequence, the actual percentage of loss is misleading and affords little or no basis for calculation of the risks of shipping in time of war. It should also be noted that considerations of expense and the fact that the attacking fleet was on the seaward flank of the trade routes prevented wide detours being made for the purpose of avoiding capture.

The summary of Red and Blue losses will show the cost of a *guerre de course* against a superior Naval Power, and proves that although a temporary commercial crisis might possibly be caused in London by this form of attack, the complete defeat of the aggressor could not be long delayed, with the result that public confidence would be quickly re-established and the security of British Trade assured.

To make an enemy's trade the main object of attack while endeavouring to elude his fighting ships is generally recognised as being strategically incorrect from the purely naval point of view, and this procedure could only be justified if there were reason to suppose the hostile Government could by such action be coerced into a mis-direction of their strategy or premature negotiations for conclusion of hostilities.

As it was considered desirable, however, that the risks to British shipping should be examined under the most unfavourable conditions conceivable, the Blue Commander-in-Chief was directed to carry out a plan of campaign which is generally allowed to be strategically unsound, and there is no doubt that, fettered as he was by these limitations, he achieved his mission with great ability, though it is open to question whether he might not have achieved a greater measure of success by the employment of his cruisers only for the *guerre de course* and the concentration of his battleships for attacks upon the line of the Red Admiral's communications.

Remarks by Chief Umpire.

A tabulated statement of captures is given.

The general result is that out of 94 sailings there were between noon on June 24 and noon on July 2, 52 captures, or 55·2 per cent. of the total trade represented in the operations. These figures at first sight appear alarming, and destruction of trade at this rate would undoubtedly cause a commercial crisis in the country.

In any statistical analysis of the value of this percentage of damage there are, however, certain arguments which must be considered.

The system of sending merchant steamers in groups along certain definitely arranged routes could not be fairly treated. This was owing to the fact that the number of vessels available for representing the trade of the country did not bear a fair proportion to the number of hostile vessels attacking that trade, and groups of sufficient numbers of ships could not be despatched.

For instance, a group of four steamers may be attacked by one cruiser, and all four may possibly be captured or destroyed, causing a loss to the country of 100 per cent. on that particular occasion.

But if, on the other hand, it had been possible to mass a group of 12 steamers sailing in company, and they had scattered on being attacked, the chances are against more than the same number, viz., four being captured by the single cruiser. This at once reduces the percentage to 33·3 per cent.

The system of sending the trade along definitely arranged routes was also hardly given a fair test, as in practice the routes did not differ to any great extent from the ordinary steamer tracks.

Considerations of time, and therefore expense, naturally precluded in peace time the adoption of the exact methods which would be resorted to in war time.

In considering the actual facts of the manœuvres, it must be borne in mind that the attack on trade routes was considerably broken up and disorganised by June 30, and that the Blue ships remaining were acting independently, and though in singularly good positions for interfering with commerce, were, with the exception of the King Edward VII. Squadron, without a leader.

The main idea which governed the conduct of the operations against the Blue commerce-destroying ships, viz., that the object was to bring the enemy to action rather than to attempt to actually protect the trade, is one which should appeal to the Naval and Mercantile mind.

Both the system of protected merchant convoys and that of a succession of rallying points along the trade routes at which men-of-war are to be found, would lead in practice to the frittering away of the forces at the disposal of the country.

It is true that during the late manœuvres the enemy's ships that remained after the southern attack on trade had been broken up, shifted their ground to the northward and placed themselves in the heart of the trade routes, at the entrance to the English and St. George's Channels.

Still, they could not long have maintained the offensive in the latter position, and it is practically certain that the commencement of the third week of the war would have seen all commerce-destroying ships either captured or blockaded in their defended ports.

It is therefore probable that on the outbreak of war shipowners would prefer to be left with a free hand as to the action of their vessels as regards routes, times of sailing, etc., but it is absolutely necessary that a limited control should be exercised by the Admiralty over the floating trade.

One of the most important considerations in connection with this subject would appear to be the question of affording all possible information to shipowners as to the safety or otherwise in war time of different routes and localities.

JAMES R. THURSFIELD.

CHAPTER VI.

THE FRENCH AND ITALIAN MANŒUVRES.

Purpose of the French operations—the new tactics.

THE French naval manœuvres of 1906 were interesting both from the point of view of naval tactics and from the opportunities which were given for the employment of submarine boats. Vice-Admiral Fournier, who was Commander-in-Chief of the fleet assembled, is the permanent Inspector-General of French torpedo and submarine stations, and his judgment and qualities as a seaman are highly esteemed in the French Navy. He is the successor, in the commanding position he holds, of Admiral Gervais, and his views have carried great weight in the direction of recent French naval policy, though they have not commanded universal acceptance. In the order he issued on assuming command of the fleet, on July 3rd, the Admiral explained the purpose of the operations, which were really fleet exercises, not based on any strategical scheme. The dominant idea was to train every one in the fleet, from the admiral in command to the bluejacket, according to their several duties and responsibilities, in the work they would have to execute in battle. This object was to be pursued systematically in the application of the new tactical principles, with which the fleet was to be familiarised, and which were to enable it to fight, if necessary, without signals or compass, maintaining an accurate and continuous fire, with the ships advantageously placed, and none of them exposed to preponderating concentration of fire, and to adopt simple means—always capable of being applied—in discovering, approaching, and attacking the enemy. These tactics had been to some extent tried in the previous year, and had afterwards been codified and circulated to the squadrons, but it had been left to officers in command either to adopt them or otherwise as they might think best. Apparently they were experimental, but Admiral Fournier's idea was to undertake progressive training for the *assouplissement* of the fleet necessary for the execution of these tactics—to give confidence and certainty to the captains in the handling of their ships, whereby they might become proficient in the maintenance and proper use of the formations required. It was necessary, he said elsewhere, to make a prolonged and exhaustive test, on a large scale, of the new methods of signalling and scouting, and of fighting without signals. It was also proposed to reproduce the principal operations of coast warfare in order to test the value of the torpedo and submarine flotillas.

Constitution of the fleets.

In regard to the actual operations, it will suffice to give a summary of events. The fleet was constituted as follows:

1*st Squadron* (Mediterranean Reserve Squadron completed), Vice-Admiral Fournier, Commanding-in-Chief.—Brennus (flag), Hoche, Charles Martel, Requin, Indomptable, Caïman. Attached flotilla—Alger, Lahire, Claymore.

2*nd Squadron* (Mediterranean Squadron), Vice-Admiral Touchard. — Suffren, Saint Louis, Charlemagne, Iéna, Bouvet, Gaulois. 1st Light Squadron.—Jeanne d'Arc, Kléber, Du Chayla, Lalande, Galilée. Attached flotilla.—Mousqueton, Arc, Arbalète, Carabine, Sarbacane, Dard.

3*rd Squadron* (Northern Squadron), Vice-Admiral Gigon.—Masséna, Jauréguiberry, Carnot, Bouvines, Amiral Tréhouart, Henri IV. 2nd Light Squadron.—Gloire, Léon Gambetta, Amiral Aube. Attached flotilla.—Forbin, Cassini, Bombarde, Flamberge, Catapulte, Baliste, Bélier, Arquebuse.

Skeleton Force constituted to represent the Enemy in the Tactical Exercises.—Dard, Galilée, Sarbacane, Lalande, Arbalète, Alger, Catapulte, Forbin, Bélier, Cassini, Arquebuse.

Details of the movements.

The 3rd (Northern) Squadron left Brest on June 20th, and anchored before Mers-el-Kébir on the 25th, having undertaken *en route* scouting and wireless telegraphy exercises covering considerable distances. The 2nd (Mediterranean) Squadron did not leave Toulon till June 28th, and before effecting its concentration was subjected to torpedo and submarine attack, the submarines approaching without being perceived. The 3rd Squadron left Mers-el-Kébir on the night of July 3rd, without lights, and the men all at their stations, as an evolution, torpedo boats being engaged, and on the following afternoon the 2nd Squadron was met, and Vice-Admiral Touchard took command. In effecting this junction there was no exercise of search and discovery, the routes and speeds being known, and the rendezvous determined. On July 5th the whole fleet was concentrated, by the arrival of the 1st Squadron, under Admiral Fournier's command.

Features of the new tactics.

The Admiral immediately undertook a series of exercises for the instruction of the captains in the tactical formations required by the new system. Certain vessels detached to represent an enemy executed movements at 10 knots, approaching the fleet from various directions, according to a scheme arranged, in order to test the formations. The fleet was extended in line of battle, in triangles by divisions, and the movements were correctly executed, the handling of the mobilised coast guard ships being especially noticed, though owing to failure of steering gear, the Bouvet narrowly escaped coming into collision with the Gaulois. It would appear that each division or group under the new system of tactics consists of three battleships —each keeping station at the angle of a triangle, and two of the ships conforming to the movements of their leader—and that these groups are stationed at intervals in line astern or abreast of one another, or in quarter line, as may be necessary to meet the particular form of attack.

The course of operations.

Early on the morning of July 6, the fleet, without lights, arrived before Algiers, and was divided into groups to steam at 8 knots upon courses indicated, for the bombardment of the forts, while the destroyers were employed in scouting along the coast. The general plan had been carefully arranged, and appears to have been an exercise for the gunners in the ships and for the men in the forts. In his report upon the manœuvres, Admiral Fournier gave his idea of the real inwardness of the operation. He had received a clear impression that a small flotilla of submarine boats would have sufficed to drive off the assailants, in view of the excessive risks they would have run, and he remarked that a mobile defence of a port by submarines was shown to be superior to fixed defences, and that submarines in such circumstances would forbid attempts at bombardment or the disembarkation of troops by the very menace of their intervention.

The fleet coaled at Algiers, no very remarkable results being obtained owing to the small number of colliers available at the port, and the nature of the coal, which was in large pieces, intermixed with about 20 per cent. of smaller pieces and dust. On July 9, the ships left Algiers, and again undertook tactical exercises, firing with blank charges. At night there was scouting, and the exercises were continued on July 10 at various distances and speeds, the enemy always being represented by a skeleton force. In the evening of that day the fleet anchored at Bougie, and prepared to resist torpedo attack by means of an observation line, patrols of destroyers, and a cordon of lights to reveal the approach of an enemy. These measures were skilfully arranged and torpedo boats attempting to pass through the cordon were discovered. Tactical exercises and operations off Philippeville were continued on the following days. The fleet then anchored at Bona and Philippeville until July 16, when scouting exercises were undertaken, followed by further training in the new tactics, the enemy approaching, and then always withdrawing obliquely at 45 degrees, followed by the fleet, so that, at the conclusion, the groups of the fleet and of the enemy found themselves in their original positions, each of them having steamed round the sides of a vast octagon. By this time the captains were gaining skill and confidence, and the fleet was well handled. On the night of July 16 there was a torpedo attack, and on the next morning the submarines came into action, apparently with success, though no torpedoes were discharged.

Up to July 19 the fleet was anchored at Biserta and Sidi-

Attack upon Biserta.

Abdallah, and on the three following days was employed in operations against Biserta, the scheme being based upon the purpose of an enemy to throw a corps of disembarkation upon a suitable part of the coast with the object of taking the place in the rear. In practice no men were landed, and the defence was undertaken by the coast batteries, torpedo flotillas, and submarines. The disembarkation was supposed however to have been effected, but it is doubtful whether a large force could really have succeeded in the circumstances. In his report upon the manœuvres Admiral Fournier again insisted upon the value, in coast defence, of destroyers and submarines, and some of his remarks are given below. In relation to the particular operation the comment of the *Moniteur de la Flotte* was that, whether the particular landing was effected or not, Biserta and, above all, Sidi Abdallah are at the present time at the mercy of a military force disembarked in the Gulf of Tunis, which could, without difficulty, occupy the heights dominating the arsenal, the lake and the town. It is therefore intended to build forts to protect the landward side of the place.

Operations at Toulon and fleet battle practice.

On July 23, scouting and battle tactics were undertaken afresh, with various other exercises and torpedo attacks, and on the night of July 25 there was an interesting exercise, Admiral Touchard, with the 2nd Squadron, presumed to be seeking refuge at Toulon from a superior enemy, passing between the Hyères Islands and the coast, while the torpedo boats went out to attack the enemy. The Admiral succeeded in gaining the port, and the 3rd (Northern) Squadron, which was the enemy, being unfamiliar with the passages, did not run risks in endeavouring to intercept him. Battle practice took place at Toulon on July 26, with full charges, for heavy and lighter guns. Three very large targets had been built, each representing the outline of a second-class battleship, 328 feet long, 26 feet high in the middle, and with an assumed width of 65 feet. These huge targets were anchored at intervals of 1300 yards in the main passage of the Hyères Islands, and the ships steamed past in their formation of triangles by divisions, the ranges varying between 4400 and 6500 yards. The sea was calm, the air clear, the circumstances favourable, and observers were stationed in the island of Porquerolles to observe the results. In his remarks upon the practice, Admiral Fournier stated that these observers, owing to the rapidity of the fire and the great number of rounds, had difficulties with their work. It was estimated that, if the targets were taken to represent second-class battleships, the hits were about 21 per cent. The 1st Squadron was a long time in gaining contact and finding the range, but afterwards the fire was well kept up. The 2nd Squadron began well, but after steaming for three minutes lost the range, and took seven minutes more to recover it, and, with changing distances, it was only kept at intervals. The 3rd Squadron gained the range slowly, and lost it after three minutes, having no further success. These results were not judged very satisfactory, but Admiral Fournier pointed out that it was difficult to understand why there had been such delay in providing telescopic sights which were in use in other navies, and which enable the target to be distinguished clearly when otherwise this would be impossible. Again, he said that the French range finder was out of date, and that in other respects the equipment was unsatisfactory.

Coaling and victualling at Toulon.

On July 27 and the two following days the fleet coaled at Toulon, the three squadrons taking 12,000 tons, all being put on board on the first day with the exception of 2000 tons. The hourly averages would have been better but for the fact that the men and dockyard lighters were employed at the same time in putting provisions and ammunition on board the ships, but within 48 hours of its arrival the fleet was completely supplied, and ready to proceed to sea. The following are coaling figures: Iéna, 200 tons; Gaulois, 158; Bouvet, 137; Amiral Aube, 132; Léon Gambetta, 128; Jauréguiberry, 117; Charlemagne, 117; Suffren, 110; Gloire, 110; Jeanne d'Arc, 197; Masséna, 95; Saint Louis, 94; Carnot, 84; and Brennus, 80.

Features of the operations.

The manœuvres came to an end on August 4, when Admiral Fournier hauled down his flag and left for Paris with the officers of his staff, having at a lunch on board the Brennus expressed his satisfaction with the results and particularly with the work done by the submarines Grondin, Bonite, Anguille, Thon, Dorade, Souffleur, Alose, and Gustave Zédé. An idea might be gained, he said, of the success by the fact that in the operations at Biserta, Toulon, and Marseilles 21 large vessels had been torpedoed. The general impression received from the manœuvres was that the training had been progressive, and that at the conclusion the three squadrons had gained cohesion and accuracy of manœuvre which were remarkable, while officers and men had given proof of untiring zeal. The manœuvres had shown what the Navy could do, and many things that it required in the way of homogeneity and unity of doctrine between the General Staff, the Superior Naval School, and the staffs of the squadrons.

Admiral Fournier on the new battle tactics.

Obligation must be expressed to the *Moniteur de la Flotte* for the use which has been made in the above summary of an admirable journal of the manœuvres which appeared in its pages, and to the same excellent paper we are indebted for some account of a lecture on the new battle tactics which Admiral Fournier delivered to the officers of the fleet, and for certain critical opinions thereon which are from the pen of the experienced officer whose pseudonym is C. Pierreval. From what has been said, it will be seen that these tactics are no longer based upon the line ahead, when a great number of vessels are engaged, and the endeavour has been made to substitute for it a system of groups, each evidently in a triangular formation, the ships guided by their leaders, and the groups in their movements by the movements of the admiral and of the enemy upon a system prearranged and understood, which can be applied with initiative and without signals. These groups are intended to be such as will do away with the liability of one ship masking the fire of another, while giving the advantage of a concentrated fire by groups, and the whole scheme preventing superior concentration of the enemy's fire upon any part of the fleet. In the system, though it may be simple theoretically, there seem to be possible complications in practice, and it is doubtful whether success has yet been attained; at least, it is certain that in some of our earlier tactical operations it was shown that groups of ships had a tendency to get "bunched up" in a way not possible with a single line. The French formation of three ships in a triangular formation is not, however, subject to the disadvantages of more dense formations if the groups are kept clear of one another. Admiral Fournier said in his lecture that an erroneous opinion of the new tactics might be arrived at if they were judged in their application to a single division, or even a single squadron. In other words, the problem of handling a fleet differs essentially from that of handling a squadron, and, with certain reserves, Admiral Fournier admitted the superiority of the single line formation for a restricted number of vessels. Admiral Gervais, in view of the disadvantage of employing a very long line, in which many ships would be out of sight of the flagship, shortened the line by doubling it, but thereby introduced the risk of the fire of some ships being masked by others, and at the same time increased the vulnerability of the fleet by massing it.

Remarks on tactics without signals.

It was the difficulty in the way of an admiral maintaining signalling communication with a long line of ships that led to the idea of manœuvring without signals, and M. Pierreval thinks that this purpose has been substituted for the primordial object which should have been kept in view. He says that there is no instance in naval warfare, even in the most recent wars, of a difficulty or impossibility of signalling leading to grave results, and it was the signalling of the Russian admiral, not the want of it, which determined the disaster in the action of August 10, 1904. Nevertheless, to be able to manœuvre without signals at all is an advantage fully recognised by the British

Fleet; but M. Pierreval contends that the advantage has so far only been proved in theory, and he thinks that, in these days of new methods of signalling, the risk of being deprived of the means is less than it was, and, in relation to the new formations, he cites the account of the Battle of Tsushima, given in the *Naval Annual* last year, to prove that signals seen are not necessarily obeyed in the stress of action. To what extent, then, may there be confidence, he says, that the coolness, detachment, and judgment of seconds in command and captains will enable them to carry out decisive movements leading to success or disaster when they are to be guided or ruled by movements of ships, perhaps difficult to perceive, and possibly caused only by the failure of steering gear?

Admiral Fournier on the advantages.

This is not, however, the view of Admiral Fournier, who says that, with a fleet organised as he would like to see the French Fleet organised to its tactical system, the battle would continue naturally and in good order, "according to simple rules, to which the *personnel* would have been accustomed in time of peace, and which they would continue to execute mechanically with ease notwithstanding the strain of the fighting." He added that "on the side of the adversary there would, on the contrary, be disorder, powerlessness, and confusion." The French are, of course, endeavouring to solve the problem that is engaging the attention of all navies which have to provide for the best employment of great fleets, and the British Navy has attacked this problem in its own way. Admiral Fournier, in his report on the manœuvres, claims for the French system the advantage that it is practicable when signalling may be impossible, that it enables the divisional groups to make the best use of their guns, and to escape concentration of fire, while enabling them to bring a crushing fire to bear upon an enemy approaching, or who exposes unequally his vessels to the fire, *uniformément soutenu et bien déployé de cette ligne de bataille.* With such a rational system, he says, and with constant and systematic preparation, the French Fleet will always be victorious over forces at least equal in strength to its own, provided that it be led by an admiral who is a skilful, experienced and resolute tactician. *Cest là pour le pays une garantie plus rassurante que l'attente, si souvent et cruellement déçue, d'on ne sait quel Messie prédestiné de la victoire.*

The Tactical Committee and the new system.

Notwithstanding this confidence, it may be observed that the work of the Tactical Committee, which began in 1900 and has been continued under the presidency of Admiral Fournier, is not yet completed. A new signal book has been issued and used with perfect success, and the new tactics have been tried without signals but after the manœuvres modifications were introduced, and these with the observations of admirals in command, have been submitted to the Committee, in view of a final decision on the subject. On the recommendation of Vice-Admiral Caillard it was therefore proposed that the Committee should themselves see the tactics, as modified, under practical trial, and the necessary special operations were being arranged for when the terrible disaster occurred to the Iéna at Toulon, which caused them to be postponed. In his report upon the manœuvres Admiral Fournier said that the new signal code had given complete satisfaction, having been applied with success from the very first day, while the tactics of the light squadron had undergone changes which he thought might be considered final.

Admiral Fournier on the value of submarines.

Admiral Fournier's remarks upon the operations of the submarine boats possess special interest. He showed their importance in the duty of preventing the disembarkation of troops. Their success had been brilliant, and it had been proved that the officers had gained great skill in their methods of approach. Some had said that a ship menaced might either steam away or attempt to run down the submarine, but the Admiral thought the latter would be a very risky procedure. He remarked that the new periscopes of the French boats, and the skilful manner in which they are used, enabled skilled officers to approach with great success, and in many circumstances, he said, they would hold ships they approached at their mercy. The great necessity is to gain skill in the approach and secure invisibility, and now the discharge of a torpedo from a submerged boat is much better assured than from a boat on the surface, the submarine suffering little from the influence of waves. The Admiral finally remarked that it had been proved impossible, save in exceptional circumstances, for battleships to undertake operations near the coasts, and that a truly mobile defence by means of large submersibles would make the disembarkation of troops impossible. Nevertheless the Admiral does not deprecate the value of the battleship. Indeed, he says that, far from excluding them, in the conditions of modern naval war, he regards the two types of vessels, the battleship and the submarine, as complementary to one another, and says they may render to one another most valuable service. "For France, the importance of the consequences which should result from the association of a large flotilla of submersibles with her squadron of battleships should induce her to push forward, with the help of private establishments, the construction of the flotilla, which alone can compensate for the progressive decline in the level of her naval power in relation to those of the ever-growing fleets of foreigners."

The Italian manœuvres, contrary to custom and to the general practice in most navies, took place in October. The programme

The Italian manœuvres. Strategical scheme and execution.

included a strategical scheme of the attempted union of two squadrons, as well as certain interesting exercises. The *personnel* showed most excellent qualities, but there was a good deal of suffering in the bad weather, which continued during the whole period of the strategical operations. In this part of the manœuvres the fleet was divided into three squadrons. "B," the strongest, with its base at Brindisi, was to affect a junction with the "C" squadron, which was to leave Augusta, while an enemy, "A," with its base at Taranto, weaker than "B," but stronger than "C," was to attempt to destroy the latter before it could affect a junction with "B." "A" squadron met with difficulties, for it had the double task of finding "C" and avoiding "B," while provided for its scouting service with only four small vessels, but the Aquilone, steaming at 18 knots in a heavy sea, succeeded in discovering at night the "C" squadron steaming without lights. The destroyer thereupon, by means of her searchlight, signalled to the despatch vessel *Coatit*, which was 10 miles in the rear, and the *Coatit*, by wireless telegraphy, transmitted the intelligence to the main body, which came up and overpowered "C." The scheme lacked the element of reality, because in war "C" would either have awaited the arrival of "B" at Augusta, or would have taken measures to avoid "A," instead of steaming upon a particular course already determined for it. Moreover, as Signor Federico di Palma pointed out, in discussing the manœuvres in the *Nuova Antologia*, no prudent admiral would have ordered his fleets to meet in the open sea, and have provided them only with destroyers to act as scouts and cruisers. The destroyers of the Brindisi squadron, "B," were compelled by the tempestuous weather to seek shelter at Taranto, so that "B" had no means of gaining touch with his friends. To make matters worse the Re Umberto had to be detached to assist these vessels, and in the storm a man was lost from the Ruggiero di Lauria. Thus the strategical scheme was deprived of the last vestige of actuality.

Fleet exercises and firing.

The manœuvres included, however, very useful tests and evolutions. Some technical exercises were executed in the use of formations analogous to those employed by Admiral Fournier in the French manœuvres, and the *Rivista Nautica* said they might form the basis for future studies. The shooting for King Umberto's cup, which preceded the actual operations, was successful, and gave a good idea of the qualities of officers and men, the percentage of hits being higher than was expected. Signor di Palma, in the *Nuova Antologia*, says that in the gunlayers' tests (*gara di punteria*) the Brin was the best ship, while the Filiberto and Ferruccio came out last. The Lauria, of the reserve squadron, was second; the Dandolo, flagship of the same squadron, seventh; and the Re Umberto eighth. In the advanced or battle firing (*tiro migliorato*), the Garibaldi and Brin were best, and the Margherita (Mediterranean flagship) tenth, only one other ship having a lesser score, namely the Lauria, which had been second in the previous list. The comment is made that, though the results were encouraging, the Italian Navy is not yet on a level with the British, which has advanced with a constant and vigorous impulsion, and "under an admiral who, untrammelled by the influence of ministers and officials, has marvellously organised this very important and delicate service."

Secondary bases and coaling.

At Augusta and Syracuse and in the Gulf of Taranto the squadrons did admirable work in creating and organising secondary naval bases—entirely with their own resources at the first two places named. At Augusta the two Mediterranean squadrons mounted four batteries, placed electric searchlights, and made a harbour boom, besides otherwise supplying and organizing the place; and the reserve squadron at Syracuse established three batteries and searchlights. The defence of Taranto was also organized, the forts being manned and new batteries raised, and a boom laid out, while the torpedo boats patrolled the offing. An attack was made by the three squadrons, the forts were "silenced," and the fleet "forced the passage," but the exact significance of the operation is not easy to determine. At Taranto also there was an exercise in coaling and victualling the whole fleet, and the Regina Margherita took on board 400 tons of combustible in two hours, thus leading the whole fleet. The success was the more remarkable because Taranto is not properly equipped with modern appliances. While this success was notable, Signor Federico di Palma asserts that the new coaling ship Bronte is something of a failure, the results having been one third less than would be attained with ordinary well-equipped colliers.

The new submarines.

The new submarines were brought into action for the first time in manœuvres. These are the Delfino, Glauco, and Squalo, and they were successful in torpedoing ships at anchor by day and night, but they gave still greater satisfaction by showing their sea stability in proceeding from Venice to Taranto and returning without any difficulty or mishap. The manœuvres, as a whole, were a great success, due chiefly to the energy and skill of officers and men, and showed that the administration has made progress, and gives promise of better future organization.

JOHN LEYLAND.

CHAPTER VII.

THE STRATEGICAL FEATURES OF THE NORTH SEA.

To say that the centre of naval activity has shifted north from the Mediterranean has passed through all the stages from political insight to platitude. Our maritime range of vision which, at the opening of the century, extended over the waters of the globe, appears now to be confined to the North Sea and bounded by the German coast. Into the political causes which have brought about such a rapid and complete revolution it is not the purpose of this paper to inquire. Whatever may be the reasons, the rise of the United States into the second place amongst the naval Powers of the world, the relative decline of the Fleet of our friends the French, the overwhelming preponderance of Japanese strength in the Pacific—all these have passed unnoticed not only by the "man in the street," but also, it is to be feared, by many public men. To the majority of the inhabitants of these islands there is to-day but one naval Power besides ourselves—Germany; but one fleet to be dealt with—the Aktive Schlachtflotte; and but one possible scene of naval conflict—the North Sea.

Much benefit would have accrued to the country if the platitude to which reference has been made had been expressed differently. Not only has the centre of naval activity shifted to the North Sea: it has returned to the North Sea. By a somewhat similar chain of events, Great Britain finds herself to-day in a position which resembles very closely that which she occupied in the middle of the seventeenth century, when Spain was still staggering under the blow that shattered the Armada of Philip II., when the power of France at sea was seriously compromised by internal dissensions, and when England's path to maritime supremacy was materially obstructed only by the Dutch. The opening of the twentieth century sees Spanish sea-power still lying where Trafalgar laid it, and the French Navy wallowing in the mire of socialism; while in the meantime a new aspirant for sea-power, nurtured by the energetic attentions of the Kaiser, has sprung up to represent the Holland of Tromp and De Ruyter.

Mercantile rivalry.

The similarity of the naval conditions existing in 1650 and 1907 does not begin and end with their geographical and political features.

England and Holland then, like England and Germany now, were the chief competitors for the maritime trade of the world, though England did not then hold the premier position. In 1643 the merchant fleet of Holland is said to have consisted of 10,000 sail, manned by 168,000 seamen, and the total value of the merchandise shipped in Dutch bottoms to have exceeded a thousand million francs. The maritime trade of England was not nearly so extensive as this, but it was rapidly growing; and her Fleet being the stronger gave her the double advantage in war of possessing a greater fighting force than her enemy, with less need to divide it for the protection of her trade. The fleets were, nevertheless, on a much greater numerical equality than the British and German Fleets can possibly be for a couple of decades; while then, as now, the Power occupying the eastern coasts of the North Sea was compelled by the nature of those coasts to build ships individually inferior to those of Great Britain.

From many points of view, therefore, the position of affairs in the North Sea is much the same to-day as it was in the middle of the seventeenth century, and an examination of the course which hostilities between England and Holland followed then cannot fail to be of value in any attempt to define the probable lines of British strategy in the event of a conflict taking place in the same theatre in our own time. Such an examination need not be lengthy or detailed, nor need every movement of the opposing forces be chronicled. Details would but serve to cloud over principles whose application is the same to-day as it was two and a half centuries ago, and which will be the same two and a half centuries hence.

Between the first and the second and third Dutch Wars there is a great gulf fixed, represented by the understanding of the functions of naval war. The dark night of 1652 had not, of course, changed to open day by 1665, but the sun was beginning to creep over the horizon, casting its rays upon some, at least, of the possibilities and impossibilities of the various stages of maritime command, and upon the primary business of naval force. Since these lessons were largely, if not wholly, attributable to the teachings of the first Dutch War, and since they remain as potent, or even more potent, to-day, it is to that conflict that our attention should be mainly directed.

The first Dutch war.

The causes which led to the war were entirely commercial; Dutch trade was vital to the prosperity, nay, to the very existence of the United Provinces; and, with the exception of the comparatively insignificant traffic with the Baltic States, every stream of Dutch commerce concentrated near and passed along the shores of Great Britain. That in these circumstances hostilities should have been confined to the attack and defence of maritime trade is not surprising.

The first object of English attack was the Dutch fleet of herring "busses" off the north-east of Scotland. A considerable portion of the wealth of the United Provinces was drawn from these fisheries, their annual trade, according to Lefévre-Pontalis,* exceeding in value eight million francs, and supporting one-fifth of the population of the country; while Charles I. so far appreciated their worth that he levied an annual payment of £30,000 for permitting their continuance. In addition to this fleet, the mutual reprisals which had been the order of the day for some time before the commencement of hostilities proper had caused a large proportion of the Dutch in-bound trade, and in particular the East Indies fleet, to take the route round the north of Scotland in preference to the more confined waters of the Channel. Consequently, although war was not formally declared until July 8, 1652, the Council of State, on June 10, instructed Blake to "take and seize the Dutch East Indies fleet homeward bound," and so to dispose his ships "that the Dutch fishery upon the coast of Scotland and England may be interrupted and disturbed, and their busses and other ships attending thereupon taken." With the major part of the fleet, therefore, Blake sailed north, while Sir George Ayscue, with a smaller force, was despatched to Plymouth in order to protect English trade entering and leaving the Channel, and to intercept Dutch vessels in the same waters.

Martin Tromp was unable to prevent the departure of either of these fleets, and Blake quickly dispersed the herring busses in Moray Firth, taking a hundred of them, together with twelve or thirteen ships of war detailed for their protection. Tromp arrived too late to interfere with these operations, and in a great storm five of his ships were lost. He thereupon returned to the Texel. In the meantime Blake had stationed himself in the neighbourhood of the islands between the Orkneys and the Shetlands, but the same storm which drove Tromp back to Holland enabled the Dutch East Indies fleet to get through unmolested.

Ayscue defeated.

Ayscue was not so fortunate. News of his destination and object had reached the States-General, and a fleet was formed under De Ruyter to convoy the Dutch outward trade to the mouth of the Channel and to bring back such vessels as might be held up by Ayscue's force. In an action in which he was numerically superior by about one-third, and, besides, was unencumbered by any such convoy as De Ruyter had under his protection,† Ayscue was worsted and forced back into Plymouth, and the Dutch ships got through in safety. De Ruyter then returned to the North Sea, joining De Witt at Nieuport. The battle of the Kentish Knock followed, the Dutch defeat being turned into a rout by the arrival of Ayscue's fleet from the west.

---

* Quoted in Mahan's "Influence of Sea Power."

† Many of the Dutch merchant ships, however, are said to have taken part in the action.

The result of this action was to force the Dutch to adopt a purely defensive attitude, and when their fleet next put to sea, under Tromp, it was as convoy to a merchant fleet of 300 sail. In the meantime the English naval forces had, for various reasons--refit, convoy, and commerce attack—been split up, with the result that Tromp, with seventy-three ships, fell in with thirty-seven under Blake in the Downs, defeated him, drove him up the Thames, and landed an unsuccessful raiding party in Kent. He then saw his convoy safely out of the Channel and returned with 250 vessels which he found waiting at the Ile de Rhé. In the meantime, Blake had gathered a fleet of sixty-six sail at Portland; but the three days' running fight which ensued (Feb. 18–20, 1653), though interesting as a fight, had little or no influence on the general course of events.

Dutch trade paralysed.

Far different, however, were the effects of an action between an English fleet of ninety-five sail and Tromp's force of ninety-eight, off Nieuport in June. The Dutch Fleet was well beaten and forced to retire, leaving the seas entirely to the English, with the result that the coasts of Holland were kept in a state of continual alarm, homeward-bound merchant ships, for lack of convoy, fell an easy prey to English cruisers off the Scottish coast, in the Channel, and at the entrances to the Dutch ports, while not a single ship was able to quit the harbours of Holland.

In the scramble for shelter after the action of June the Dutch Fleet had divided. The greater portion, consisting of eighty-seven sail under Tromp, had taken refuge in the Wielings, or West Schelde, while a third of that number, under De Witt, made for the Texel. But the English force, coming between them to prevent a junction, or to defeat the separate divisions in detail, was unable to do either, since its superiority over Tromp's fleet was not sufficient. Tromp put to sea on July 27, and, maintaining only a partial action with Monk, but close enough to draw off the ships blockading the Texel, was joined three days later by De Witt. In the course of the terrific action that ensued Tromp was killed, and although it was necessary for the English ships to return to their ports, such Dutch vessels as kept the sea were shattered by a fearful gale; and, both fleets being now practically impotent, peace was made between the two countries.

Results of the war.

In general naval history the first Dutch war is chiefly remarkable, as has already been said, because it led to the abandonment of one and, generally, an improper use of naval force, and to the perception of its correct manipulation. But for England as a North Sea Power it has an overwhelming significance, for it shewed us with startling clearness the tremendous advantages which our geographical position confers on us in a war with another Power bordering on the same waters. In the raids and counter raids on commerce, which were the dominating features of the war, Holland had been distinctly the loser. In the twenty-three months during which the war had lasted, 1700 merchant ships, valued at nearly six millions sterling, had fallen victims to the English Fleet, and this at a time when the revenue of England stood at about a million and a half; while the Dutch captures did not reach a quarter of that value. The war, with the exception of Tromp's unsuccessful raid into Kent, had been fought entirely at sea, and, "short as this quarrel was, it brought the Dutch to greater extremities than their fourscore years' war with Spain." *

The reprisals which heralded the approach of the second war clinched these lessons in the minds of the Dutch. A force under Sir Robert Holmes reduced several Dutch settlements on the West Coast of Africa and took many trading vessels and three frigates found there. Later, crossing to the American coast, he took possession of Manhattan Island and New Amsterdam (now New York). About the same time convoys of merchantmen were seized off Bordeaux and Cadiz. These incidents, added to the damage inflicted on their trade during the previous war, led the Dutch to anticipate the paralysing effects of naval defeat. The States-General, further, realising that the force at their disposal was not sufficient at the same time to furnish convoys for their merchant ships and to meet the main English fleets with any prospect of success, determined to concentrate their undivided energies on the latter object. They consequently issued an ordinance absolutely "prohibiting all subjects of the United Provinces to stir out of their ports upon pain of confiscation of their ships and merchandises"; and, no Dutch force being available for the attack of English commerce, a clear issue was left between the naval forces of the opposing nations. Captures of merchant shipping were, it is true, made by both sides, and minor actions fought in the attack and defence of maritime trade; but such incidents were quite accidental. The assault of trade was definitely abandoned as a primary feature of naval warfare. A nation whose main fleets were defeated could not hope to defend its commerce; while, on the other hand, the trade of the victorious fleet was absolutely safe. Mercantile security was recognised as but one

---

* Campbell's "Admirals."

of the complements of the command of the sea, and upon the struggle for that command—the defeat of the enemy's main fleets—every effort was concentrated. Nevertheless, it was Dutch trade again which suffered, and the suffering was none the less for being self-inflicted.

Second and third Dutch wars.

Of the general details of the Second and Third Wars there is no need to speak. It will be sufficient for our purpose if we select two or three salient points which have a direct bearing upon the possibilities and limitations of a twentieth century naval war in the North Sea. The first of these was the failure of the Earl of Sandwich to prevent the small Dutch squadron returning from the West Indies under De Ruyter from getting into the Ems, and the similar failure of the detached squadron under Sir John Tiddiman to capture the East Indies merchant fleet, which had reached Bergen viâ the North of Scotland. Primarily these failures were due to the fact that the English Fleet was not strong enough to allow of an intercepting squadron being detached until the main Dutch Fleet had been met and defeated. By the time that had been done De Ruyter had got a considerable distance down the North Sea, and formidable land defences had been thrown up for the protection of the East Indies fleet in Bergen. A more decided superiority of the English Fleet would have enabled the Earl of Sandwich to despatch a squadron to the Orkneys as soon as war was seen to be inevitable, strong enough to beat De Ruyter and to take possession of the richly laden merchant ships.

Another and a far more important incident which occurred after the defeat of the English Fleet in the "Four Days' Fight" is thus described in Colomb's "Naval Warfare":—

> The Dutch had so far gained a victory, but they were under the impression not only that the victory was more complete, but that its effects were more permanent and far-reaching than they really were. In their mistaken view they not only hurried their fleet of sixty sail out of the Texel on the 25th of June, but prepared with it a fleet of transports carrying troops, in order to make a descent upon our coasts, having by their victory, as they supposed, secured themselves from interruption at sea. With this fleet, considerably reinforced from other ports, they appeared at the mouth of the Thames. But at the Nore, to their disappointed astonishment, lay a new English fleet, computed at eighty-eight sail, with fire-ships and ketches. These ships were the repaired and refitted remains of the beaten fleet, with additions, all collected, and now approaching completion, by the great exertions of Sir William Penn, now one of the Commissioners of the Navy. The Dutch hopes were entirely frustrated by this unexpected sight, and they found themselves reduced to carrying out the simple operation of blocking the Thames, which they did until the 19th or 20th of July, when the English fleet put to sea after them.

This significant incident will be referred to again, but it may here be noted that the English made a similar blunder in 1673, embarking troops for the invasion of Holland while the undestroyed Dutch Fleet lay in the Schooneveld. A greater appreciation of the limitations imposed upon military operations by the existence of a hostile "fleet in being" was shown by Albemarle and Prince Rupert after the recuperated English Fleet in 1666 had met the Dutch and beaten them back to their ports, when a small frigate squadron under Sir Robert Holmes was detached for an attack on the shipping in the Vlie. So successfully was this carried out that the loss inflicted on the Dutch is said to have amounted to £1,100,000—more than two-thirds of the annual revenue of England. The operations of De Ruyter in the Thames and Medway in 1667, being the result of abnormal conditions that cannot possibly recur, need not detain us.

The outstanding feature of the events with which we have been dealing is the immense benefit which accrues to Great Britain by reason of her geographical position. In the first war that position enabled her to intercept Dutch trade with such effect that the losses inflicted on our enemies were so great as to compel a peace which our bare naval superiority—never in those days a very substantial quantity—even backed by military expeditions, could not have done. In the Second and Third Wars the Dutch, profiting by their experience, suspended their trade, but were unable for long to face the financial stagnation which followed the drastic remedy. Not the least remarkable fact about these wars is that all three were, with the exception of minor and always unsuccessful raiding expeditions, confined to the sea.

German sea-borne trade.

The similarity of the conditions existing in the 17th and 20th centuries has already been remarked upon; whatever difference there is—we are, of course, limiting our attention to the North Sea—is all in favour of Great Britain. The great nations of the world are more than ever dependent upon trade for their existence, and the maritime trade of Germany is assuming every year a more important place in the national economy. In a report entitled "Die Entwickelung der Deutschen Seeinteressen im letzten Jahrzehnte" (The Development of German Maritime interests in the last Decade), drawn up by the German Admiralty and presented to the Reichstag in 1905, the value of the foreign trade of Germany which was borne by sea in 1904 is estimated at £425,300,000, or 69·8 per cent. of the total foreign trade of the country. It is doubtful whether Germany could hold out for long in face of the suspension of this vast volume of trade; and it is in the hands of Great Britain to force that suspension as soon as events warrant it.

It is, perhaps, impossible to describe the relative positions of Great Britain and the North Sea Powers more pertinently than is done in "The Reminiscences of Richard Gibson," written in 1654, and published by the Navy Records Society in their volumes relating to the first Dutch war. Gibson was a merchant skipper, and, falling in with Captain Foster, who had commanded the Phœnix during the war, was given by him an account of a conversation with the captain of a Dutch merchant ship which Foster had captured.

> One day after dinner, says Foster, I told him that the Lords States-General o Holland, being men of great abilities in State affairs, I did very much wonder they should be so much overseen as to begin a war with the English, when (like an eagle's wings extended over her body) our coast surrounded theirs for 120 leagues from Scilly to the Maas in Holland one way, and as many from the Orcades thither the other way; and the wind blowing above three-quarters of the year westerly on the coast of England, made all our cape-lands and bays very good roads for ships to anchor at, so that converting our fisher-boats into vessels of war, we could with them only, readily and speedily, put a stop to all your trade from France, Biscay, Portugal, Spain, the Mediterranean, Barbary, &c., or force you to a circumnavigation round Ireland (as your East India ships) from all those places home; and having Ireland to clean ships at and victual could easily intercept your trade that way also.

Effect of concentration.

The possibility of achieving this object, which might be termed a high-sea blockade, has been materially increased by the policy of concentration carried out in the last few years by the Admiralty, and by many other changes in organisation which, viewed singly, are apt to be misunderstood or their meaning only partially grasped. When the present scheme of redistribution is completed, in May, 1908, 86 per cent. of the battleship strength of the British Navy will be concentrated in or near Home waters. In full commission there will be, in the Channel, Atlantic and Home Fleets, twenty-six battleships and fourteen armoured cruisers; while the German active battle fleet at the same date will consist of eighteen battleships, and possibly five, but probably only three, armoured cruisers. The Nore division of the Home Fleet, consisting of six battleships and six armoured cruisers, together with the destroyer flotillas at Sheerness and Dover, would be sufficient to deter the German Fleet from running the gauntlet of the Straits and breaking into the Channel. If by luck and hard fighting the attempt should be successfully made, the hostile forces would be so crippled and weakened as to fall easy victims to the Portsmouth and Devonport divisions of the Home Fleet, even though the Channel Fleet should not be immediately available. With greater risk, owing to less favourable opportunities for torpedo attack and the greater distance of the succouring forces, the Nore Fleet of twelve armoured ships could, by hanging on to the German rear, and holding them until the arrival of one of the other fleets, frustrate any attempt to reach the Atlantic north about; but to obviate even these risks, it is worth while considering whether the Atlantic Fleet might not with advantage spend more of its time cruising in the neighbourhood of the Orkney and Shetland Islands.

From these considerations it is clear that it lies within the power of the British Navy to confine the operations of a naval war with

Germany entirely to the North Sea; and it is this fact, coupled with the prominence, amounting almost to monopoly, with which Germany occupies our maritime horizon, which is responsible for the practical elimination of the protected cruiser. The three duties devolving upon these craft in war are:—(1) to act as scouts to the main fleets; (2) to defend our commerce; (3) to attack the enemy's commerce. Considering the restricted area over which the operations of a naval war with a North Sea Power are likely to extend, the number of small fast protected cruisers (twenty-two) and scouts (eight) is probably ample for the first of these. Those on foreign stations, however, should be brought home and replaced by the larger and slower vessels. As for the second, our commerce will be adequately defended, and in the best possible manner, by keeping the enemy in the North Sea and meeting him there with our concentrated battle fleets; while if (3) be necessary, if, that is to say, the enemy does not suspend his sea-borne trade, as Holland did in the seventeenth century, and Prussia in 1870, a small squadron of slower protected cruisers in the mouth of the Channel, and another of armoured cruisers off the Orkneys, will provide all the force that is necessary. The vessels in the north of the German Ocean should be armoured, as they might be required to co-operate with the Home Fleet in holding this exit against a hostile squadron.

North Sea Cruiser Squadron.

The establishment and maintenance of a cruiser squadron in the neighbourhood of the Orkneys is perhaps the one thing required to render perfect the organisation (as distinct from other factors of efficiency) of the British Navy in view of a possible war with Germany. It is certain that in the unhappy event of such a war a squadron will have to be sent and kept there, and equally certain that for the use of the ships an elementary base, furnished only with supplies, coal and moorings, will be necessary. Rosyth is too far south to fulfil the requirements satisfactorily, and Peterhead, where a national harbour is being constructed, suffers from the same cause. Possibly a good anchorage could be found somewhere in the vicinity of Wick, in Caithness, and the few thousands of pounds that would have to be spent would be money well invested. No more ships need be put into commission, for the Second Cruiser Squadron (attached to the Atlantic Fleet) would fall naturally into the position. The adoption of this proposal would furnish a further guarantee against raids or invasion, by placing another powerful squadron, in addition to the Home Fleet, on the flank of Germany's communications with our coast.

The Home Fleet base.

The selection of Sheerness as the base of the principal division of the new Home Fleet has met with a good deal of criticism, though it is always difficult to discover exactly upon what grounds the objections are made. According to Mahan, "the strategic value of any position depends (1) upon situation (with reference chiefly to communications); (2) upon its strength (inherent or acquired); and (3) upon its resources (natural or stored) .... It is upon situation that attention must primarily be fixed." With these points in mind the main features of Sheerness may be tabulated as follows:—

Situation: it lies at the most important point of commercial concentration in the kingdom, without itself being of any mercantile importance. It is the nearest naval port to the German coast, from which (Wilhelmshaven) it is distant only 280 miles. Its position is such that, in the event of the British Fleet being defeated at sea, no better place of retreat could be devised. No attempt at invasion could be made while a "fleet in being" existed at the Nore threatening to emerge upon the flank of the communications of the invading Power; and the fortifications at the Thames mouth, together with the destroyer flotillas at Sheerness, Dover and other North Sea ports, would prevent any effective masking and also any attempt to sow with mines the channel leading from the Medway to the sea. Colomb's description of a historical incident bearing directly upon this phase of the strategic importance of Sheerness is quoted on a previous page. There is, perhaps, no better illustration in history of the potential value of a "fleet in being."

Sheerness is only three hours' moderate steaming from Dover, so that a force there practically commands the Straits as effectively as it would if stationed at that place itself.

Strength: Sheerness is very strongly fortified, two powerful 9·2-in. guns having been recently added. There are formidable defences also at Shoeburyness and on the Island of Grain, the whole forming a triangle of works which no fleet could pass or silence. Details of these defences are, by request, withheld, although the writer received them correctly from a German bluejacket casually met in Berlin. They had, he said, been fully described to the whole ship's company.

Resources: Sheerness possesses no natural resources, but it is in direct and easy communication with Chatham and Woolwich.

In opposition to these very great advantages, which give Sheerness a strategical value unrivalled by any other position in the North Sea, the Nore port suffers from two drawbacks, neither of which, however, presents very formidable difficulties. The entrance to the harbour is obstructed by a sandbank which renders it impossible for ships with a draught of more than twenty-one feet to enter at low water; but as a channel much longer than this bank, leading up to

Chatham, was kept open at an annual cost of between £4000 and £5000, no great expense should be required to make Sheerness harbour available during the whole of the 24 hours. The other drawback lies in the lack of docking accommodation, a question which need not be entered into here, as it has recently been stated in the House of Commons that it is receiving the earnest attention of the Admiralty. It may, however, be suggested that the original policy with regard to Rosyth should be reviewed. It has yet to be shown that the creation of a new dockyard or first-class base in the North Sea is necessary, and although only £18,000 is being spent on it in the years 1906–8—a fact not without significance—even that sum might have been more profitably spent in developing the existing bases. It would, for instance, have freed Sheerness from the encumbrance of the bar.

German North Sea bases.

On the German side of the North Sea the principal places of interest from the point of view of possible war are Wilhelmshaven, Cuxhaven, Heligoland, and the mouth of the Kiel Canal. Of these, Wilhelmshaven, Germany's chief naval port in the North Sea, lies in a position of great strength, not because of the features of the place itself, but because of the extreme difficulty of the approach. In places the navigable channel narrows down to less than 900 yards, and is swept by very heavy guns, the mounting of which has only just been completed. When the present writer visited the town in November last, excavations had just been commenced for the widening of the Ems-Jade Canal, from Wilhelmshaven to Emden, so as to enable torpedo vessels of the largest size to traverse it. This is a very interesting development, as, when completed, it will turn Emden, if not nominally, at least very actually, into a torpedo base of the first importance. From Emden to Sheerness is about 250 miles.

Cuxhaven, at the entrance to the Elbe, is being rapidly developed, so that in a few years it may be available for the repair, if not also the construction, of vessels of the largest type. By that time probably the widening of the Ems-Jade Canal will have been finished, and it has been suggested that Emden will then become what Cuxhaven is now, the headquarters of the torpedo branch of the German Navy.

Heligoland.

The island of Heligoland is a position whose importance appears to be greatly overrated in Germany. It is already strongly defended, and in March this year the Government decided to spend a further £60,000 in increasing the fortifications. The reasons for this are somewhat obscure, but statements that have appeared in several portions of the German Press, technical as well as general, lead to the conclusion that in that country Heligoland is held to protect the approaches to the Weser and the Elbe, and with them the commerce of Bremen and Hamburg. The idea that German commerce will be attacked within 50 miles of the coast is, however, due to a sublime failure to apply the teachings of history to modern conditions, to appreciate fully the trend of recent changes in the organisation of the British Fleet, and to realise the strategical demerits of Germany's geographical position. If her commerce be attacked at all it will be at the mouth of the English Channel and off the North of Scotland, where the operations can be carried on far more effectively than off the low-lying German coast, within range of the torpedo flotillas at Wilhelmshaven, Cuxhaven and Kiel. It is further claimed that Heligoland protects the mouth of the Kaiser Wilhelm Canal; but since it is 46 miles from Brunsbüttel, and no fleet bent on reaching that place need pass within 25 miles of it, its value in this respect is at least problematical. Its two exposed harbours, formed by the proximity of the islet of Düne, can accommodate nothing drawing more than 22 ft. of water, and present splendid opportunities for torpedo attack, as the boats could steam straight through without turning. As a torpedo base it is possible, but a long range bombardment, or the detachment of a masking force of destroyers, would easily neutralise whatever value may attach to it in this respect.

The Kiel Canal and the Baltic.

During the past few months the Kiel Canal has received a good deal of attention in the Press, mainly on account of the intention of the German Government to enlarge it so as to allow warships of the large type now proposed to pass through. Of much greater importance than this, however, is the authoritative rumour in circulation to the effect that Germany is endeavouring, with the assistance, voluntary or otherwise, of Denmark, to neutralise the waters of the Baltic Sea The object in view is, of course, to render Germany's principal naval harbour of Kiel unassailable, so that vessels injured in action in the North Sea could pass through the canal and repair secure from interference. It is not at all likely that such a proposal as this will be acquiesced in by the British Government; but even if, in a weak moment, approval should be given, it need not affect one whit our conceptions of the North Sea as a theatre of war. The respect paid to international agreements of this kind depends wholly upon the power of the contracting parties to enforce it; and no admiral would hesitate to drive his fleet through a Dano-German treaty when the destruction of a hostile fleet was the end in view. There are also whisperings abroad to the effect that the German Government is considering the advisability of carrying out the original idea with regard to the Kiel Canal, and extending it to Wilhelmshaven. This would be a great gain to the potentialities of their naval power, but so many schemes, demanding millions for their execution, are in the air that it is unlikely that this will be taken up.

German torpedo efficiency.

The confined area of the North Sea is especially favourable to torpedo operations, and the attention devoted to this branch of naval war in Germany is really remarkable. In the course of a recent visit the present writer made the acquaintance of a petty officer attached to the Wilhelmshaven torpedo division, and by him was given a perfectly accurate list of the guns mounted in the Thames Mouth defences, together with their angles and rates of fire. In addition to this, the sailor knew the exact positions of all the moorings in Sheerness harbour, and which were generally used by the various classes of ships. This intimacy of acquaintance with the questions affecting torpedo attack is universal throughout that branch of the German Navy; and it must be admitted that in war Germany would have no hope of success but in delivering a surprise attack upon whatever ships might be lying in Sheerness Harbour. To effect such a surprise, however, has been rendered practically impossible by the large increases that have been made in the number of destroyers maintained on the south-east coast; but it is nevertheless as well to remember that a score of boats and a thousand lives would be well spent in the destruction of the twelve battleships and cruisers that are to constitute the Nore division of the Home Fleet.

Conclusions.

Reviewing the whole subject, it is difficult to avoid the conclusion that the main factor in an Anglo-German war, as it was in the Dutch wars of the seventeenth century, is the absolute control which Great Britain, thanks to her geographical situation, holds over every trade route leading into the North Sea. Relatively to the eastern shores of that sea, Great Britain may be regarded as one huge strategic base, from either of whose extremities her fleets may emerge first to confine the enemy within an area of 240,000 square miles and then to combine and defeat him and drive him back to his ports. This done, Great Britain becomes an ideally situated base for the blockade of the enemy's fleet and the attack of his naval harbours; while all the time a mere handful of cruisers in the Channel and off the North of Scotland, with a few in the Mediterranean to watch such ports as Genoa and Trieste, suffice for the severance of every means of maritime communication with the outer world.

In order to fully avail ourselves of these advantages it is necessary, in the opinion of the writer, that certain preparations should be made consistent with them. These may be placed under three heads.

I. *Matériel.*—Although armoured ships of the largest type are essential for fleet actions at sea, the nature of the German coast is such that the employment of heavily armoured light-draught ships which can lie close in shore and shell the enemy's repairing bases may be thought necessary. Ordinary sea-going vessels are too lightly armoured and draw too much water for this purpose, but its performance appears to be the only means of annihilating the sea power of an enemy.

Protected cruisers will be of very little utility, and with the exception of the few criticisms and suggestions made in the foregoing pages, the Admiralty policy with regard to this class of ship is in complete accord with the needs of the case.

Fast sea-going torpedo vessels will be required in large numbers; our position in this respect is satisfactory.

II. *Bases.*—Sheerness is being rapidly developed as a torpedo base, but steps should be taken to make it adequate to meet the needs of a first-class sea-going fleet such as is to be stationed there. A channel should be cut through the bar, and two floating docks moored in the lower reaches of the Medway, since Chatham Dockyard is only approachable by big ships at certain states of the tide.

Great progress is being made with the new harbour at Dover, though miscalculations as to the strength and direction of tides and currents may considerably postpone the date of completion. From a strategical point of view the writer suggests a doubt as to whether the expenditure of so many millions upon Dover is justifiable, since naval forces situated at Sheerness, with its commodious harbour and formidable defences, would only secure the object which like forces at Dover would effect, namely, the command of the Straits, from which Sheerness is only fifty miles distant. Dover, nevertheless, is an excellent torpedo base, and as such it is to be permanently utilised.

The Rosyth scheme, to which reference has already been made, seems very unlikely to be carried out in anything like its original form, and the fact that the present Board is not enamoured of it is evident from the Civil Lord's statement in the House to the effect that it had not been under their "minute consideration." It was embarked upon largely in response to public agitation, which cannot in the nature of things be expected to concern itself very deeply with strategical necessities. The late Board provided under the Naval Works Loan Bill a sum of £165,000 for preliminary expenses, but only a small proportion of it has been spent. Some definite statement as to the Admiralty's intention in the matter would be very welcome, for if, as is generally held in naval circles, the whole thing was a mistake, there is no justification even for the small sums that are now being spent upon it.

The construction of a cruiser base in Caithness is a necessity which becomes the more pressing the more closely the position is examined.

A fraction of the money it was proposed to spend upon Rosyth might, with every advantage, be applied to this purpose, and the more ambitious, but strategically unnecessary, scheme allowed to drop.

III. *Organisation.*—With the exception of the permanent squadron off the North of Scotland, the distribution of the Fleet, regarding the North Sea as the probable scene of war, if war there is to be, is satisfactory. Forty-seven battleships less than twenty-five years old will be concentrated in Home waters, of which twenty-six, besides fourteen armoured cruisers, will be in full commission. Most of the cruisers are little, if at all, inferior as fighting machines to the German battleships built before 1902. The Nore division of the Home Fleet, always in full commission and ready for sea, will be an effective precaution against those sudden military raids which hitherto have been regarded as England's chief danger. The establishment of a destroyer flotilla at Dover, and the increase in the number of those at Sheerness-Chatham, tend largely to neutralise the possibility of unexpected torpedo attack from Emden or Wilhelmshaven, besides helping to keep the Channel free of hostile ships.

Although the whole world must earnestly wish that such a catastrophe as an Anglo-German war may never happen, we may content ourselves with the knowledge that, should the unfortunate necessity arise, the British Navy will be in a position to meet it without confusion, promptly and effectively.

PERCIVAL A. HISLAM.

CHAPTER VIII.

IN GIBRALTAR BAY.

NOTES ON NAVAL POLICY.

I.

THE meeting of the combined squadrons, lately under the command of Sir Arthur Wilson, was an occasion of no ordinary interest. The Fleet was the most powerful which had ever been brought together for peace manœuvres. The King and Queen of Portugal gave a cordial welcome. Other spectators were few.

Bound to Huelva, the Sunbeam fell in with the British Fleet, standing in after sundown to Lagos Bay. There is neither lighthouse nor beacon to guide the mariner to the anchorage. It was a severe test of professional skill. With homely truth my old sailing master observed: "It must require a mind to command such a Fleet." The spectacle was in the highest degree imposing and impressive. The Sunbeam was bowling along under a full spread of sail, with a fine breeze off the land; the Fleet was steaming fast in the contrary direction, in close formation and in perfect order; battleships in the centre, the screen of cruisers keeping station ahead, astern, and on either beam. In the gloaming the hulls were dimly visible. As far as the eye could reach, the waters were aglow with masthead lights, and night signals continually passing along the lines. Dull would he be of soul whose interest in the Navy was not kindled by the display of naval power in the ships, and in consummate skill of handling, which it has been endeavoured, thus inadequately, to describe.

II.

Battles won by men.

Beginning the present writing off Lagos Bay, it is fitting to accord the praise which is due to the British Admiralty. Under successive administrations it has been the wise policy to give to the Navy practical training in the execution of manœuvres on a large scale. It is an obvious remark that unnecessary risks should not be incurred. Naval engagements are not won by complicated movements.

Praise is due to the officers upon whom the onerous responsibilities are laid of directing naval manœuvres on a great scale. Among those who have profited by the wider opportunities of recent years for the study of an exacting profession, Sir Arthur Wilson stands in the foremost rank, as a worthy successor to the Martins and Hornbys of the elder day. In his Memorandum on the Naval Estimates now before Parliament, a high and well-merited tribute has been paid by Lord Tweedmouth to an officer who has dedicated time, thought, and rare ability, with undivided interest, to the noble service of the Navy.

The recent experience of war in the Far East has shown the vital importance of training. The victors had neglected no opportunity of instruction. The conquered were wholly unprepared—no manœuvres, no exercises at night, no practice in gunnery. They had no confidence in themselves. They went into action as men doomed to defeat.

M. Bos, the able author of two recent reports, has given a summary of the information which they contain in his instructive volume, "La Marine qu'il nous faut." As a comprehensive and authoritative survey of naval progress, there are no more valuable publications than the annual reports by the committees of the Senate and Chamber of Deputies on the Navy Estimates of France. Dealing with the war in the Far East, comparison is given by M. Bos of the forces engaged on both sides. The statement is of the highest significance in connection with the training of the Navy. When the war began Japan had six battleships. In an early stage two of these vessels were sunk by the explosion of submarine mines. The strength in cruisers consisted of eight armoured and a few protected vessels. In fifteen months this relatively slender force had taken or destroyed eighteen battleships, four armoured and fifteen protected cruisers. The Russians lost 8000 killed and wounded and 6000 prisoners. The Japanese loss did not exceed 1000 men. Never before in naval history has an illustration so striking been afforded of the truth of the opening words of the author of Naval Policy, in his chapter on Tsushima, where he says: "Battles are won by men, and not by ships."

Sea training.

The policy of keeping our ships at sea and combining the squadrons from time to time for manœuvres is good, not only for the professional instruction of the officers, but also for the training of the men under their command. It is not conducive to discipline to crowd large bodies of young seamen into barracks. As a member of the Board of Admiralty by whom, in deference to a general demand in the Service, the first barracks were erected, I feel an unavailing regret that public money should have been misapplied. Newly entered bluejackets and stokers should be sent afloat, preferably in sea-going ships. In the Home Fleet nucleus crews may with advantage be strengthened.

Naval education.

Before leaving the important subject of training, some reference seems called for to our naval schools. In the education of cadets the Admiralty have lately taken a new departure. The time had arrived when a change had become necessary. Masts and yards have disappeared. A knowledge of machinery has become essential. The executive officer must study steam. He should be able to keep a watch in the engine-room. He should understand the work of the stokehold and the management of boilers. He does not need the manual skill of the artificer. The new scheme is on the right lines. Manual instruction has, perhaps, been carried too far. Time is spent at Dartmouth in the trade of the moulder and the smith which might be better employed on subjects more directly connected with executive duties. In his fragment of autobiography, Lord Nelson dwells on his experiences gained as a midshipman, in the command of his ship's long boat, in navigating the channels of approach to the Thames. At the height of his career he found his early training very helpful in the narrow waters of the Sound. Instruction in the management of boats in Torbay would be good as a preparation for service afloat. It is not, I venture to think, mere partial affection that prompts the suggestion that a cruiser of the Sunbeam type would be a valuable addition to the equipment of Dartmouth College.

I take this opportunity of saying that I have lately seen much of midshipmen in the social hour. It has been gratifying to note their keen and intelligent interest in their profession. As a school for the making of English gentlemen of distinguished manners, the Navy of to-day fully maintains the old and honourable traditions.

III.

Recent battleship types.

From Lagos Bay the Sunbeam proceeded to Huelva and Gibraltar. At the conclusion of the manœuvres, the ships of the Atlantic and the Mediterranean Squadrons came in to coal, under the shelter of the breakwater recently completed. Gibraltar, long neglected as a naval station, now possesses the finest artificial harbour in the world. It was filled by the ships of the two squadrons. With that noble array of the latest ships before them, the editors, past and present, of the *Naval Annual*, were naturally led carefully to review the construction which from year to year we have undertaken to describe. The experiences of the greatest naval battle since Trafalgar are now before us. Nothing new was learned at Tsushima as to the vulnerability of unarmoured structures under heavy fire, nor as to the value of armour for protection. There were other lessons. It was shown that the big ship can bear severe local injuries which in a small ship would be fatal. Temporary repairs to local injuries can now be executed with a rapidity which in former times and with inferior appliances was impossible. Under the new conditions, as under the old, the relative strength of navies depends essentially on battleships.

Whether designed by Sir William White or Sir Philip Watts, our British vessels of war will fully bear comparison with their contemporaries in all foreign navies. Nor has the Admiralty failed to maintain the strength of the Navy at the standard approved by Parliament. An article has lately been published in the *Times* giving the leading statistics. Our superiority over the two-Power standard in battleships of the first class falls little short of 100 per cent. Our maritime superiority being fully assured, the time seems opportune for full deliberation before a decision is taken as to new construction.

King Edward and Lord Nelson classes.

The eight battleships of the King Edward VII. class were well represented in Lagos Bay. In armour, armament, speed, coal endurance and sea-worthiness these recent designs, at the time when they were ordered, were not surpassed elsewhere. The King Edward class has 16,350 tons displacement, and can steam 19 knots. The Lord Nelson and Agamemnon are improved King Edwards, of the same tonnage, but with less horse-power, and a speed of 18 knots. The armament has been strengthened by giving up the ten 6-in. guns of the King Edward, and by increasing the 9·2-in. guns from four to ten in number. The battleships now completing for the United States have the same displacement as the King Edwards and Lord Nelsons. In the American as in the British types, the speed is 18 knots, and the full coal supply 2000 tons. The American ships carry eight 12-in. guns mounted in pairs in turrets. The Lord Nelson is armed with four 12-in. guns and ten 9·2-in. guns, and an approximately even number of quick-firers. It is difficult to pronounce judgment as to which of these armaments is the more effective. The naval architects of the United States are distinguished for ability and inventive power. Comparing their designs with those of our British constructors, it is evident that, in the leading features, it has not been possible on the further side of the Atlantic to build ships having a conspicuous advantage over those of the same date, designed for the British Navy.

The Dreadnought.

Turning from the ships which formed the line of battle of our present squadrons to those now building, the Dreadnought shows a notable advance in weight of armour and protection. Displacement, 17,900 tons; speed, 21 knots; armament, ten 12-in., twenty-seven 3-in. guns. In the British Navy it has been consistently held that the weight available for armour should be used rather in the protection of the central body of the ship than in a continuous but narrow belt on the water line. The conditions required in the Dreadnought were laid down by the naval members of the Board of Admiralty, with the advantage of the fullest information as to the experiences of the Japanese Navy, supplied by British officers who had been present in battle in the flagship of Admiral Togo. The technical responsibility for the Dreadnought rests with Sir Philip Watts and his able assistants. The design for the Dreadnought was approved by a strong committee of naval officers, shipbuilders, and men of science.

Foreign Dreadnoughts.

The decision taken by the Admiralty to lay down ships of the Dreadnought type is confirmed by the adoption of a similar type by all the maritime Powers. Imitation is the sincerest form of flattery. For the United States a design has been approved for a new type of battleship. Displacement 20,320 tons; speed 21 knots. Special attention has been given to protection from gun-fire by armour, and from the submarine mine by internal sub-division, by the quadruple bottom, and cellular construction. The armament consists of ten 12-in. guns, mounted in pairs in turrets amidships, and capable of being trained at either broadside.

The ships lately ordered for France, Germany and Japan will exceed the Dreadnought in dimensions. The leading features are given in the table below :—

	Number.	Displacement.	Speed.	Armament.	Quick-firers.
France	6	18,111	19	4 12-in., 12 9-in.	16 3-in.
Germany	2	19,000	19	16 11½-in.	
Japan	2	19,350	22	4 12-in., 12 10-in.	12 Q.F.
—	2	21,000	20	12 12-in., 10 6-in.	

The laying down of the Dreadnought is fully justified by the weight of authority, both at home and abroad. The bold step which the British Admiralty has taken has caused hesitation and delay elsewhere. Long consideration has been required in the preparation of new designs. We have stolen a march.

Secondary armaments.

In the designs for additional ships of the Dreadnought class, the entire removal of the secondary armament would appear to demand the fullest consideration. An able essay by Lieut. Blanchon, of the French Navy, under the title "De Lissa à Tsoushima," has recently been published under the auspices of the French Navy League. The author insists that the Russian Fleet was fatally disabled at Tsushima by the secondary armament of the Japanese ships. The hail of explosive projectiles destroyed the superstructures and set the ships on fire. Some were sunk by the torpedo. In the battleships of the Condorcet class, the latest designs projected for the French Navy, and in the latest ships as yet laid down for Japan, Germany and Italy, the secondary armament is retained. It may perhaps be well that in some ships laid down for the British Navy the secondary armament should be retained.

The 9·2 in. gun can hardly be reckoned as part of the secondary armament. In the present connection it may, however, be suggested that by retaining some guns of that calibre the advantage on which many authorities insist of increased rapidity of fire would be secured.

Numbers *v.* displacement.

While the laying down of ships of the Dreadnought type is commended, as it has been said, by an overwhelming weight of authority, there are grave objections to continual increase of dimensions, and consequent reduction in the number of ships which can be built with the appropriations voted by Parliament. There are operations of naval warfare which can be performed more effectively by many ships than by few. The tactics of the past, as described by Mr. Julian Corbett and other writers, are only in a limited sense applicable to naval warfare under modern conditions, The ideas, embodied in the well-known memorandum, wherein the Nelson touch was explained, are for all time. The breaking up of the Fleet into divisions, acting more or less independently, the movements leading by surprise and concealment to a decisive mêlée, could only be possible if the fleet at the disposal of the admiral were adequate in point of numbers. The necessity for numbers was shown in the grand manœuvres of last year, and more especially in the pursuit of the enemy after his squadrons had been broken up and his ships dispersed. However large the dimensions, there is no immunity from destruction. The submarine mine was a deadly weapon to both sides in the late war. Before Port Arthur on the 13th April, 1904, the Russian battleship Petropavlovsk, 11,800 tons, was sunk, and the Pobieda, 12,600 tons, was seriously injured shortly after. Two out of six first-class battleships of Japan and a swift protected cruiser were sunk on the same day. In the United States and elsewhere submarines are being perfected. In narrow waters, and off the entrances to harbours, they are a grave danger to large ships.

It is possible to give protection more or less complete to machinery and buoyancy. No ingenuity of the naval architect can contrive for the officers in command of fleets and ships a vizor which will give protection without obscuring the field of view. In the late war the losses among the superior officers were very heavy. Admirals

Makaroff and Withoeft were among the fallen. In naval warfare superior officers are exposed to risks which military leaders are not in the same degree called upon to take. The illustrious names of Ruyter and Nelson are at the head of a long list of admirals who have fallen in battle. Conning-towers and shell fire have increased the casualties. In the late war, when an admiral fell, his staff, standing by his side, shared his fate. The bridge and the conning-tower are as the heel of Achilles. If it is impossible to give protection in a most vital spot, it is an argument against undue increase of dimensions.

In peace as in war service there are risks from collision and strandings. A Parliamentary return of last Session shows that in 1905 ten ironclads were injured by collision and stranding. The ships were under repair and therefore not available for a considerable time, in one instance for five months. In 1906 casualties were numerous. The Montagu was lost in fog; the Dominion went ashore in the estuary of the St. Lawrence from an error in navigation. In war, lights would not be shown. Buoys and beacons would be removed. Without these aids to the seaman the navigation of the Southern part of the North Sea would become exceedingly difficult.

Comments on the Dreadnought.

Commenting on the Dreadnought class, in a lecture delivered last year before the Society of Arts, Sir William White made some observations which should awake attention. "The question," he says, "naturally arises whether the enormous expenditure on a single vessel will produce commensurate results. Up to a certain point it has been desirable to secure a great concentration of offensive and defensive powers in a single ship, but the multiplication of heavy guns in a vessel costing so much as the Dreadnought introduces new considerations. It must be difficult to mount ten 12-in. guns so as to secure full efficiency for all. It is worth serious consideration whether advantage would be gained by distributing the expenditure required for two Dreadnoughts over three vessels which collectively might have equal speed, armament and defence, and possibly superior fighting power. Increase of dimensions, subject to these conditions, would be accompanied by lessened risk of disablement or foundering in case of grounding or under-water attacks. Tactical advantages might also be gained by an increase in numbers."

Retaining the guns, armour and speed of the Dreadnought, it would seem desirable to include in future programmes of ship-building some ships armed with a less number of guns, and in which it would not be attempted greatly to exceed the speed of battleships building for foreign Powers.

Speed.

It is desirable to be equal to other navies in the quality of speed.

It is even more essential to have an advantage in armour and armament and in the number of ships. Speed, at the best, is precarious. Funnels may be shot away, or gravely injured. Protection of funnels by armour is hardly practicable. In a preface to Lieutenant Blanchon's essay, Vice-Admiral Humann specially refers to the chapter on speed. "Ah ! la vitesse—la survitesse ! Idole aux pieds d'argile, devant laquelle nos ministres se montrent trop facilement enclins à sacrifier les éléments décisifs de la victoire, les seuls qui comptent, et, agissant quand l'ennemi est au contact, nombres et puissance de l'artillerie, gros stock de munitions, stabilité de plateforme agilité evolutive. Quel rôle, la vitesse a-t-elle joué dans le combat de Tsoushima ?" In the newest ships ordered for Japan it has not been deemed necessary to insist on the speed of the Dreadnought.

It is not necessary to dwell at length upon all the improvements which the experiences drawn from the war in the East have shown to be necessary. M. Bos especially insists on the following points :—

Uniformity in armament.
All guns to be of the heaviest calibre.
Increased supply of ammunition.
More protection, especially for funnels and steering arrangements.
Cutting down superstructures.

Cruiser types.

The cruisers last completed for the British Navy were well represented in Lagos Bay. If it is difficult to design a type of battleship which shall be in all respects satisfactory, in the cruiser class it is impossible, within reasonable limits as to cost and dimensions. The first cruisers of great size and speed were those laid down for Russia. It was necessary to build vessels of the same class for the British Navy. We began with the Powerful and Terrible. As compared with the excellent cruisers of the Crescent class, their immediate predecessors, the speed was increased by one knot. The coal supply was doubled. The displacement was increased from 7700 to 14,200 tons. There were grave objections to so great an advance in size and cost in cruisers unprotected by vertical armour. The Powerful and Terrible were followed by the eight protected cruisers of the Diadem type. Displacement reduced to 11,000 tons. Speed 20½ knots. As compared with the Crescent class, the gain in speed and armament was inconsiderable. In the cruisers of the Cressy type, next laid down, the displacement was increased to 12,000 tons, with an appreciable gain in speed and protection. The area of side protected by vertical armour remained inconsiderable. The Cressy class was followed by the four armoured cruisers of the Good Hope type, displacement 14,000, speed 24 knots, coal supply 2000 tons. The armaments were more powerful than had ever before been mounted in cruisers; the protection by vertical armour was largely increased. Once again there was hesitation at the Admiralty as to the building of ships as costly as battleships, but without their fighting power. The next cruisers laid down were the sixteen of the County class. They are fine sea-keeping ships. On the measured mile their speed is 23–24 knots. Their speed at sea shows a conspicuous advance on the performance of any cruisers of earlier date. The protection of the County class is insufficient. Once more a less vulnerable type of cruiser was desired. The Duke of Edinburgh and Black Prince carry a heavy armament, and the protection is more complete than in the noble cruisers of the Good Hope class. To provide for this addition of offensive and defensive power without increasing dimensions, it was necessary to cut down free-board, with consequent loss of sea-keeping qualities. In the latest cruisers these defects have been remedied by adding, and necessarily adding, to dimensions and cost.

Number.	Class.	Displacement.	Cost.
4	Warrior	13,550 tons	£1,217,000
3	Minotaur	14,600 „	£1,410,110
3	Invincible	17,250 „	£1,744,056

Doubts have been raised as to the building of cruisers as costly as the most powerful battleships, superior in speed, yet inferior in armour and armament. It is contended that as armoured cruisers come nearer to battleships in armour and armament, it will be difficult to limit their rôle to that strictly appertaining to cruisers. In the anticipation of a hard fought battle they would take their place in the line, where their speed would give no advantage, while in armament and armour they would be inferior to the battleships to which they were opposed.

Armoured cruisers.

These arguments are weighty but not conclusive. We are bound to build for the British Navy armoured cruisers at least equal in armament, protection, speed, and endurance to any vessels at the disposal of foreign powers, and we must build such vessels in sufficient numbers. The British list of armoured cruisers includes three ships Invincible type, three Minotaur, four Warrior, two the Duke of Edinburgh and Black Prince, and four Good Hope type. There are few vessels of the same powerful type under foreign flags. Two armoured cruisers of 11,600 tons and a speed of 22 knots are being built for Germany. A cruiser of larger dimensions of the same speed has been ordered. France has seven armoured cruisers exceeding

12,000 tons and speed 22–23 knots. The Navy of the United States has ten ships of a similar type. Four ships of 10,000 tons are in hand for the Italian Navy.

The necessary strength of the British Navy in armoured cruisers cannot be arbitrarily fixed. Our requirements, as it was said by Sir Cyprian Bridge, must be measured by a shifting standard. We must go by the number of the other people. Neither in the numbers laid down, nor in the development of all the elements of fighting efficiency, has any other Power attempted to rival the efforts made in recent years by the British Admiralty.

Commerce and protection.

The means by which protection would be afforded to commerce were explained by the Admiralty in a note prepared for the information of the Commission on Food Supply. In the great war security from attack was best afforded by the method of convoys. The conditions have been changed by steam and wireless telegraphy. The assembly of large numbers of ships for convoy would be known to the enemy, who would thus be enabled to deliver an attack in force. Protection by the method of patrol or by policing the trade routes is disapproved at the Admiralty, as tending to fritter away the forces at the disposal of the country. Under modern conditions, it is held that protection to commerce will be given most effectively by shadowing the commerce destroyers of an enemy. The operation of shadowing may commence by an endeavour to keep a hostile vessel in port. If the commerce destroyers succeed in getting to sea they must be hunted down. The greater the numbers in chase the more difficult for the commerce destroyers to do damage to commerce or to avoid capture. In his evidence before the Commission on Food Supply, Sir Cyprian Bridge, in reply to Mr. Chaplin, appropriately used an illustration drawn from the hunting field. "You do not hunt a fox with a single hound, and when he is being hunted, he leaves the hen-roosts alone. I would like to bag him, but next to that I would like to keep him from doing any harm." For the operations described by Sir Cyprian Bridge the armoured cruiser is necessary.

Protected cruisers.

In protected cruisers the British Navy has at the present time an overwhelming superiority. Vessels of this class could give effective protection to commerce from interruption by guerilla warfare. As against armoured cruisers they must be reckoned as non-combatants. When the war with Japan commenced, three Russian cruisers of the largest dimensions were lying at Vladivostock. They did no effective service. When they met the Japanese Squadron the result was disastrous. The Rurik went down after an heroic resistance. The Rossia and Gromoboi made good their retreat to Vladivostock with heavy loss. In the Spanish-American War, feeble indeed was the resistance offered by armoured cruisers to the attack of more powerful vessels, manned by more skilful gunners.

Scouts.

Eight vessels have recently been built for scouting duties. They were constructed from designs prepared by eminent private firms at the invitation of the Admiralty. The scouts steam 26 knots. The coal supply at measured mile draught is under 200 tons. Vessels designed as the eyes of the Fleet should, as Sir William White points out, have sufficient coal to enable them to keep company with fleets at cruising speed. They should be able to run out and home from the battleships at high rates of speed. The scouts are too small for their special duties. They are the least satisfactory vessels laid down in recent years for the British Navy.

The three scouts now building for the United States have a larger displacement and approximately the speed of the British type. They carry 1250 tons of coal. Third class cruisers have been lately laid down for the German Navy; displacement, 3350 tons; speed, 23·5 knots. In armament and coal supply the British scouts will not compare with the German cruisers. The latest type of third class cruiser built for the French Navy has less speed than the German type, but a heavier armament.

Destroyers.

In the estimates now before Parliament, provision is made for laying down a torpedo-boat destroyer of 1800 tons; estimated speed 36 knots; oil carried on load draught 150 tons. The Swift is practically a non-combatant vessel. The speed of 36 knots could not be maintained in open waters except in the finest weather. The endurance, even with oil as fuel, must be insufficient for scouring the ocean. The seven ocean destroyers now in hand will steam 33 knots, and their cost is half that estimated for the Swift.

Mercantile auxiliaries.

In view of the failure of the ablest constructors, both in the Admiralty and out of doors, to produce an effective cruiser for scouting duties, the policy of subventions to ocean greyhounds merits attention. It was ably advocated by Lord Charles Beresford in his evidence before the Committee on Subsidies to Ships. Naval reconnaissances could not be pushed home by non-combatant ships. With swift battleships in touch with the enemy, mercantile cruisers would be capable of doing good service in maintaining the lines of communication with fleets. They would be secure from capture by their high and enduring speed.

No regularly built vessels of war have the sea speed of the ocean liners. On the voyage from New York to Gibraltar the squadron under Prince Louis of Battenberg maintained, not without difficulty, an average speed of 18 knots. The speed of the Dreadnought on her recent successful experimental cruise to Trinidad was 17 knots. Warships are severely handicapped. The Drake carries 4000 tons of armour and armament, and much of this ponderous weight at a considerable elevation above the water. A large proportion of the coal supply is stowed in bunkers, so placed as to give protection to machinery, and therefore difficult of access.

Mercantile auxiliaries are capable of doing good service, not only as scouts, but for the protection of commerce against interruptions by privateers. The naval advisers and administrators of the United States were among the first to appreciate the importance of auxiliary cruisers. In a report of 1869 the Secretary of the United States Navy wrote as follows: "There is another element of defence in time of danger, perhaps as effective as any other available to wise and liberal statesmanship, and such means would be at hand if we had lines of ocean-going steamers established of high speed and able to keep the sea for any length of time. Any of the ships could be converted quickly into a ship of war. A comparatively small force of this kind, appropriately armed, and let loose on the ocean under the command of bold and intelligent officers, would be a dangerous foe to the commerce of any country. Our own ships were substantially driven from the seas by two or three roughly equipped vessels much inferior in power to those of which I have spoken."

Subventions to mercantile cruisers were strongly advocated by Sir Nathaniel Barnaby. In a paper read at the Institute of Naval Architects in 1878, he proposed that the fastest steamships in the merchant service should be placed on an Admiralty list. They should be specially adapted for service as cruisers, by internal sub-divisions more complete than would be required in ships built solely for purpose of commerce. Armaments and fittings were to be prepared and kept in store at naval stations, as well as at Home ports. The crews would be completed from colonial Royal Naval Reserves.

In the discussions on the paper by Sir Nathaniel Barnaby, his suggestions were supported by the high naval authority of Sir Spencer Robinson, the Controller of the Navy, and by Admiral the Hon. Sir Frederick Grey. The latter spoke as follows:—"The idea of trusting to our merchant ships at all has been deprecated. Now, having been at the Admiralty, and felt the difficulty of providing even in peace time the force necessary to fulfil the various duties devolving on our ships of war, I think it would be utterly impossible for the Navy alone to provide sufficient protection for our merchant ships." At a later date proposals for the adaptation of ocean steamers to war purposes were advocated by Sir Donald Currie and supported by Sir Cooper Key and Sir Anthony Hoskins. These distinguished officers considered it desirable that armed merchant steamers should be able to protect themselves against the class of vessels which in war would probably be sent against them. Turning to the latest authority in his presidential address to the Institution of Civil Engineers in November, 1903, Sir William White strongly advocated the policy of subsidies to mail steamers. He urged that all important maritime countries reckoned on the employment of mercantile steamers of high speed as a part of their naval force. In the Spanish-American war such steamers had rendered excellent service.

Looking back to an earlier experience, in the hasty preparations for war on the occasion of the Penjdeh incident, the Admiralty were compelled to have recourse to the measures described and recommended by Sir Nathaniel Barnaby. On the Australian and China stations vessels were hired and fitted as auxiliary cruisers, and necessarily at a heavy cost. Nor was it possible to fit the ships by any improvised arrangements, as if they had been originally designed for service as cruisers.

Foreign subventions.

Mercantile auxiliaries are enrolled, in numbers more or less considerable, in the Navy Lists of all the leading maritime Powers. France has thirty-three auxiliary merchant cruisers. They may be classified as under:—

Number.	Displacement.	Speed.
Two	Exceeding 11,000 tons	20 knots
Five	7,000 to 9,000 tons	17½ to 19 knots
Sixteen	5,000 „ 7,000 „	16½ „ 17½ „
Ten	2,000 tons	15 „ 17½ „

Suitable armaments have been prepared for these vessels.

In Italy, as in France, the Government has sought to foster maritime enterprises by bounties and subsidies. The expenditure has been burdensome, and the effect discouraging rather than stimulating to enterprise. There is no mercantile cruiser on the Navy List of high speed or large dimensions.

With little aid from the State, Germany has created a flourishing mercantile marine. Two German companies, the Hamburg-American of Hamburg and the Nord-Deutscher Lloyd of Bremen, are the largest owners in the world. The tonnage of both companies exceeds 700,000, as against 180,000 tons for the Cunard Company. German administration is efficient. Competition is not carried, as with us, to excess. We build more tonnage than we can at all times profitably employ. There are five auxiliaries on the German Navy List, of the largest dimensions and as yet unrivalled in speed.

Four fast and powerful vessels are enrolled in the United States Navy List. President Roosevelt has strongly recommended to

Congress that fast ocean services should be established by liberal subsidies under the American flag.

The British Navy is ill supplied with auxiliaries. We have on the list three fine vessels, owned by the Cunard Company. Two vessels, with which we hope to regain the blue ribbon of the North Atlantic, are approaching completion. With a total expenditure on the Navy of £31,789,000, the amount provided in the present year for merchant cruisers will not exceed £112,000. Looking to the services which auxiliary vessels might render in time of war, the charge for subsidies is not liberal. In future arrangements for subventions to merchant steamships, it does not appear necessary to insist on the 25 knots of the new Cunarders. For a ship of 20 knots average ocean speed Lord Camperdown's Committee estimated the average annual subsidy at £9000; for 22 knots, £50,000; for 24 knots, £110,000. Ships capable of maintaining a speed of 22 knots over a long distance would not be ineffective for scouting duties. Protective arrangements—at least by coal and armour—should be insisted upon.

If it should be possible to utilise mercantile auxiliaries, the construction of special vessels for service as scouts would no longer be necessary. By keeping down expenditure on cruisers, Germany has been enabled with a relatively moderate estimate to build up the powerful Fleet of battleships which has in recent years been created. In France the expenditure on cruisers has been excessive; it has materially affected the naval position.

It is not necessary to dwell at length on the immense benefits, as well political as commercial, which may be looked for from swift communications. To our fellow subjects dwelling—

> "By the long wash of Australasian seas,
> Far off,"

ocean liners are a bond of Empire in a sense which we of the old land imperfectly realise. Nor should we limit our view to our fellow subjects within the Empire. There is, as Captain Mahan has truly said, a patriotism of race. We and our kin beyond the sea are united, not sundered, by the broad Atlantic. The ocean liners are a bond of union.

The policy here recommended should not be pursued by hasty measures. Opportunities offer when new ocean services are being established with the motherland, and, with the aid of a colonial subsidy, a fast service to Canada has lately been opened by the Canadian Pacific. A subsidy has been granted by the Government of Newfoundland for a line of service to the mother country. For the promotion of trade, and as links of Empire, it would be policy on the part of the Home Government to co-operate in these and similar undertakings.

Summary.

Summing up the suggestions which it has seemed desirable to bring forward, our shipbuilding vote should be expended as far as possible on battleships. It is not intended in the preceding pages to suggest that the largest and most powerful types should disappear. It has been urged that some ships should be of less dimensions than those last laid down. It is imperative to maintain our strength as well in numbers as in individual power. In the class of armoured cruisers we are strong. We must be prepared to meet the fast and powerful vessels elsewhere. Protected cruisers are too vulnerable to be reckoned as effective fighting ships. The Admiralty have rightly decided that it is not necessary at the present time to lay down additional vessels. For scouting duties, and as a preparation against the interruptions of commerce by improvised cruisers, the reinforcement of our list of auxiliary vessels, as opportunities offer, is a policy approved by the highest naval and technical authority. It should commend itself to statesmen.

In conclusion, of the many duties with which the great department of the Admiralty is charged, new construction is the most difficult. The progress of invention is unceasing. The best designs of to-day become obsolete to-morrow. Our difficulties are shared by all naval administrations. *Unus utrique error.* When we turn from shipbuilding to manning, there is no uncertainty as to the aims and the methods of an efficient naval administration, and the men are more than the ships. In the training of officers and men, the Admiralty are neglecting no means to secure efficiency. The assembly of the combined squadrons in Lagos Bay, for exercise in the open ocean in mid-winter, was no holiday task. It meant strenuous and anxious work for all concerned.

To hold the command of the sea, more is needed than professional skill. In the war in the East it was by force of character, by patriotic devotion and by the skill and confidence which constant training alone can give, that Japan prevailed. These are the qualities by which the victories of the British Navy have been won in the past, and on which we must ever chiefly rely.

BRASSEY.[*]

---

[*] *Commenced off Lagos Bay. Final revise at Apethorpe,* 12 *April,* 1907.

CHAPTER IX.

THE REORGANIZATION OF THE NAVY.

Inter-related character of the reforms in progress.

THE Memorandum on Admiralty Policy issued by Lord Cawdor, and printed in the *Naval Annual* last year, gave a survey and summary statement of the results achieved by the Admiralty in its reorganisation of the Fleet and the Naval Services up to the date of its publication in December, 1905. It was stated that the reforms in hand were all related and interdependent, having their foundation in the reorganisation of the *personnel* and the redistribution of the Fleet described in the two Statements issued by Lord Selborne in the Decembers of 1902 and 1904. Thus the new character given to naval education involved far-reaching changes in the service and allocation of officers, and reacted also on the entry and organisation of seamen, stokers and marines. The release of crews from ships which would not be of value in war made it possible to man Reserve ships with permanent crews, and the formation of a Reserve Fleet ready for service brought about a fresh distribution of the Fleet in commission, and a better system of training for the Royal Naval Reserve. At the same time Lord Cawdor pointed out that the whole of the recent changes had had an effect on the Navy Estimates, through the elimination of older ships, the reduction of small establishments abroad, and other changes. The system had been submitted to a complete overhaul, which has since been continued, the purpose being to increase the essentials of fighting efficiency, while cutting off or reducing those things which were considered redundant or less important.

The Admiralty and its critics.

The object in what follows is to give some account of the continued developments, and to take stock, as it were, of what has been accomplished, without entering into the arguments to which some of the changes have led.* The real question at issue between the disputants is, of course, whether the Navy is, or is not, now on a higher level of efficiency and readiness for war, whether it is, or is not, stronger and better organised and administered than it was before the great series of reform was undertaken. To this question no specific answer will be attempted here, but no one can doubt that recent Boards of Admiralty, under Sir Frederick Richards, Lord Walter Kerr, and Sir John Fisher, have done an immense work in increasing the value of the Navy. It is more powerful in its elements, much better in its reserves, personal and material, much nearer to mobilization, greatly improved in its internal organisation, and brought to a high level of efficiency in gunnery, which is the envy of all other navies.

---

* These changes have been discussed in the recent volume by "Barfleur" on "Naval Policy" (Blackwood), described as "A Plea for the Study of War," which describes recent changes as having been made in the spirit of "the *matériel* school," and by "Civis" in a series of articles in the *Spectator*, on "The State of the Navy in 1907," reprinted in a volume (Smith, Elder), which advocates the appointment of a Committee of Lords and Commons to inquire into the administration of the Admiralty. The exposition and defence of Admiralty policy will be found chiefly in a manual entitled "The Truth about the Navy" (Chapman and Hall), and in a long series of articles in the *Times* (January and February, 1907).

The subjects to be treated.

The notes which follow do not pretend to be exhaustive. The object is to make a survey of the changes in progress up to date, and the subjects may be grouped suitably under (1) Administration; (2) Education and Training for Officers and Men; (3) the Distribution of the Fleet as affecting its Internal Organisation; (4) Dockyard Reorganization and Shipbuilding Resources; (5) Shipbuilding Policy. Inasmuch as certain of these subjects were treated in the *Naval Annual* last year, and are dealt with, to some extent, in the present volume, some of them may be dismissed briefly in this place.

The Admiralty Board and the redistribution of business.

In regard to the constitution and duties of the Board of Admiralty, it is well known that changes were introduced by the Order in Council of August 10, 1904. This regulation has caused discussion. There are some who hold that the arrangement under which the First Sea Lord is made alone responsible for the fighting and sea-going efficiency of the Fleet, marks a far-reaching innovation which greatly lowers the position and authority of the other members of the Board. It has also been said that the status of the First Sea Lord himself is diminished by giving him the support of irresponsible colleagues, who are practically only heads of departments. In short, it has been contended that there is a real danger of the interposition of the First Sea Lord between the First Lord and the other Lords. On the other hand it is maintained that the great and necessary object has been to charge the First Sea Lord with the most important and responsible work of preparing for war, and of advising on all large questions of naval policy and maritime warfare, while divesting him of various duties of lesser importance which interfered with his higher occupation, including some appointments, now transferred to the Second Sea Lord. That there should be an officer charged with these high duties of preparing for war has long been contended by some critics of the Admiralty, but assuming that such a change has been brought about, they do not all view it with the favour that might have been expected. Some assert that the First Sea Lord is still too much immersed in the detailed work of his department. Lord Selborne, however, said in the House of Lords that no substantial change in the pre-existing procedure of the Board of Admiralty was either intended or contemplated by the Order in Council and the Memorandum concerning the distribution of business. The only purpose was "to describe exactly what always has gone on at the Board of Admiralty." Without any attempt to arrive at a decision one way or the other, it may be observed as pertinent to the question discussed that it is a common characteristic of official business to pursue a channel marked out for it by existing conditions, or by the strong personalities of those who direct it. When Mr. Childers endeavoured to regulate the work of the Admiralty by what Sir Spencer Robinson described as "cast-iron rules," the system presently reverted to its inevitable and traditional course. How far therefore the present arrangement will be permanent it is impossible to say, but the administration of the Admiralty cannot be said to depend upon particular rules or precise forms.

The education of officers.

Turning to the changes in the education of officers, a great deal might, of course, be said, but the subject having been fully discussed in the *Naval Annual*, it must be dealt with briefly. The system instituted more than two years ago has been conducted successfully, and is being developed and carried on probably with some modifications in detail made in the light of present experience; in fact, difficulties are being allowed to find or suggest their own solution, and those who are engaged in the work of training entertain no doubt as to the success. It appears to be an eminently wise procedure to adopt a broad principle and let the details be settled as they arise, for the Navy has become, in large part, though not in its essentials, an engineering profession, and material developments are taking place and are foreshadowed which may work a further revolution in the internal economy and organization of ships of war. It is, therefore, desirable to have a flexible system of education which will enable the officers of the future to adapt themselves to the coming state of things. During the past year the system at Osborne and Dartmouth has undergone no change, and its object is well known. As Lord Charles Beresford once wrote, naval officers in twenty years' time will wonder how a steam Navy could possibly have been run and administered by officers who know nothing whatever about steam or mechanical appliances, though every revolution, action, and duty could only be carried out by the aid of machines and skilled mechanics. So keen a critic of the Admiralty as "Barfleur" remarks that his whole argument tends to show that the modern officer should have as intimate a knowledge of his ship as had his predecessor, and, "if he controls and manages the motive mechanism, he will do no more than did the seamen of the Elizabethan age and their successors of the Nelsonian era. We hold that the division between the military and engineer branches in the sea-going navy is a source of weakness, and should gradually cease." (P. 53.)

The War College at Portsmouth.

The higher training of naval officers, long neglected, is now provided for in the war course, which, from its modest and tentative beginning in a series of lectures on tactics for senior officers, has grown wonderfully in importance, and promises to take a still larger place in the training of officers in the future. Its beginning may be said to date from the year 1900, when a war course for captains and commanders was experimentally established at the Royal Naval College, Greenwich, under the late Rear-Admiral (then Captain) H. J. May, which that lamented officer carried on until his death, making it a remarkable success. Its main subjects were strategy, tactics, naval history and international law, with some subsidiary professional subjects. The course was of eight months, but in 1903 it was divided into two courses of four months each, in order that a larger number of officers might take advantage of it, and a short course in strategy, tactics, and naval history was added for flag officers. In May, 1904, Captain E. J. W. Slade succeeded Rear-Admiral May, and the work has since grown in importance, and the staff has been enlarged. When the Fleet was reorganised in 1905, and ships were placed in commission with nucleus crews, a redistribution was arranged, and it was decided to hold annual courses of three months each at the three naval ports instead of at Greenwich. Now, there is a properly equipped War Course College at Portsmouth, with its headquarters in the building which once accommodated the School of Naval Architects, and with a school ship, the Terpsichore, under command of Captain Slade. There are modified courses at Devonport and Chatham. The College is now one of the naval services, in the same position as the gunnery and torpedo establishments. Admirals, captains and commanders attend lectures on naval history, tactics, and international law, and there are instructive war games, which are really strategical exercises, or class-room problems in naval strategy. The course includes other important professional subjects, and not the least important part of the scheme is that naval officers are brought into touch with military officers from the Staff College at Camberley, and that thus the foundation is being laid for a right understanding between the chiefs of the two services in regard to their mutual duties and obligations. The success that has been met with throughout the work of the naval war course is unquestioned, and recent Boards of Admiralty have worked quietly to add the final essential in naval education. It may be remarked incidentally that the higher training of officers afloat is also much improved, and that the great assemblies of fleets for manœuvres give opportunities which have never existed before. Such operations and battle practices are part of the regular routine of the fleets.

The Navigation and Signalling Schools and the Central School for Gymnastics.

Another important part of the scheme for the training of officers, and in part of warrant officers, petty officers, and men, has been the institution of special schools. The Navigation School at Portsmouth, which was instituted in the Mercury in 1903, was the first systematic attempt to provide a proper means of training the navigating officers of the Fleet. The Mercury proved too small for the requirements, and the school was transferred in January, 1906, to the college in Portsmouth Dockyard, with two first-class gunboats as tenders, while an old coast defence gunboat was fitted with various types of compasses and instruments for use as a compass adjusting ship for training purposes. Upon this system the work now goes on for the instruction of junior lieutenants qualifying to become navigating officers, for navigating lieutenants qualifying as navigators for large ships, and for acting sub-lieutenants, who now take this course at Portsmouth instead of their six weeks' course in pilotage at Greenwich, where no opportunities were provided for practical work, and every acting sub-lieutenant has to pass before being confirmed in his rank. The school accommodates ninety-six officers, but surplus accommodation is found on board the Vernon. About 300 officers have now passed through the school. Reference may also be made to the Signalling Schools which have been established at the three ports, and to the advanced course of instruction at the Portsmouth Signalling School. With the introduction of new systems of signalling, the importance of providing better opportunities of instruction became evident, and this instruction takes a larger place in the training of officers and men. A limited number of lieutenants pass the School, to be appointed throughout the Fleet as signalling officers, and to superintend the instruction and examination of officers and men in signalling, wireless telegraphy, and kindred subjects. These new institutions have already had a very important influence on this branch of naval training, and there are periodical courses both in signalling and Fleet manœuvres for officers of commanders' and higher ranks. It may also be noted that at the Portsmouth Naval Barracks a new central school of gymnasia has been established, where all the gymnastic instructors of the Fleet are now trained, and where lieutenants and Marine officers pass qualifying examinations as inspectors of physical training. In regard to these various establishments it is only necessary to add that experience has led to progress, and that the work is going on with complete success.

The training of men.

Turning to the important question of the training of men, reference may be made to the arrangements made by the Admiralty to provide a suitable class of men to assist the junior engineer officers in engine-room watch-keeping. Boy artificers have been entered, the object being to train up a high class of technical workmen. Engine-room and stokehold watch-keeping is to be performed by selected men from the stoker ratings. By these arrangements improved prospects of advancement are opened to a meritorious class. In the seaman class boys are given eight months of elementary gunnery, seamanship and mechanical work on entry. This harbour training is followed by work at sea, with courses of seamanship, gunnery and mechanical work. The boy also goes through a course of stokehold training to enable him to take his place in working with the stokers when necessary. When his training is over the first-class boy serves on board a sea-going ship till the age of eighteen, when he becomes an ordinary seaman without examination. But the ordinary seaman cannot become an able seaman until he has qualified in seamanship, gunnery, torpedo field training, mechanical work and stoking. He is constantly practised in shooting at the dotter, deflection teacher, swinging target, and by other methods. The splendid results attained in the gunlayers' tests and battle practice show the excellent effect of the system as it affects the young men entering the Fleet and those who were in the Service when the new system was introduced. A spirit of the utmost keenness prevails throughout the whole Navy in the matter of gunnery, and the Fleet is brought into a state of far higher efficiency than at any previous period by reforms of this class.

The training of Naval Reserves.

Before we leave this part of the subject reference may be made to the new system with regard to the Naval Reserves. Measures are being taken for the expansion of the Royal Fleet Reserve by the introduction of a partial short service system, whereby stokers and seamen are passed into the Reserve after four years' service at sea. The Fleet must be maintained on the highest level of efficiency. If this cannot be secured by long service ratings, there must be a reserve of men who have been trained in the Fleet, and readiness must be the keystone. A naval action may take place within a few hours of a declaration of war, or even before any declaration is made. We cannot hope to maintain a small naval *personnel*. Some steps have, however, been taken, to which approval may be given unreservedly, for they add to the readily available Reserve of well-trained men. The Royal Naval Volunteers have been brought into existence.

The training of the Royal Naval Reserve has been set upon another footing. Training at shore batteries and on board out-of-date hulks has been discontinued under the new system, and the men carry on periodical training in ships in commission, thus giving them a far better opportunity of learning the work of the Fleet.

The system of nucleus crews.

We now turn to the highly important subject of the distribution of the Fleet as this affects its internal organization. When the redistribution of the Fleet took place towards the end of the year 1904, the Admiralty were enabled to man all the fighting ships in Home waters with nucleus crews, to the extent of some two-fifths of their proper complement, while reserving a further establishment of men on shore. The system of nucleus crews has wrought a great change for the better in the readiness of the Fleet for war. Experience has shown the desirability of some modifications. A "sliding scale" for nucleus crews has been introduced. The nucleus system itself continues unchanged. Its critics have been compelled to acknowledge its advantages. "Nucloids," as ships in this category are often called, are palpably more efficient and far nearer actual readiness for operations than the ships under the former system, provided with skeleton crews, and laid up and rusting in inactivity. These nucleus ships are assembled periodically in divisions or squadrons for exercise, spending considerable periods at sea. When their companies have been completed and they have been placed in full commission, they have taken part in manœuvres with complete success. In the great combined operations off Lagos in February, 1907, some thirty battleships and thirty cruisers, many specially mobilized, were assembled. The reorganization has given much more sea work to the Fleet as a whole than under the former system. Never before have such large fleets worked together as part of the regular routine of the Navy. Not the least advantage of the nucleus system is that the special ratings retained on board are able to execute many of the repairs of the ships. Dockyard expenditure is thus reduced. We no longer see many mobilized ships crawling back as lame ducks to port from the fleets engaged in manœuvres. The state of affairs under the old system was deplorable. Manœuvres have often lost part of their value through the breakdown of mobilized vessels. It would seem a justifiable conclusion that the nucleus system and the related changes, such as bringing home ships from some distant stations, where officers and men were to a large extent isolated and cut off from the life of the Navy, have had the effect of greatly improving the internal organization of the Fleet and increasing its preparedness for war. The redistribution of the Fleet was sound in policy, if on some stations the reduction of force may have been carried too far.

The Home Fleet.

The creation of the Home Fleet, though called for by a strategic necessity, has an intimate relation to the changes described. It is made possible by them, and is the logical outcome of what has so far been accomplished. Partly in relation to the Home Fleet, but not entirely, the new system of a "sliding scale" for nucleus crews has been devised. It has been argued that the new Fleet will be a training force, as was the case with the old Channel Squadron. This will not be so, because the Home Fleet will have its permanent nucleus serving generally for the full period of the commission, and it is well known that the *personnel* of the Nore division is to be increased progressively to full complements. It would obviously be unfair to criticise the Home Fleet as if it were a complete organization which there had been time to develop and perfect. The hope and expectation are that it will ere long be found a larger evolution of our forces in commission, adding immensely to our power in the quarter where it may have to be exercised. In the increasing efficiency of the Home Fleet the "sliding scale" will play its part, but it has really been instituted to permit of those reserve ships which are first for service being almost fully manned. Other ships, which for reasons of time or circumstance are not likely to be employed at once, will have smaller complements, and those which have little fighting value may have skeleton crews only. Thus it may well happen that destroyers and submarines will practically be fully manned, other vessels to be completed later for service having smaller crews in the Reserve. But in truth the word "Reserve" no longer perfectly describes the situation of those vessels which have real fighting value.

Dockyard reorganization.

The changes which have taken place and are in progress in regard to the *personnel* of the Navy and the Fleets in commission and reserve have been concurrent with a reorganization of the dockyards. To this they have an intimate relation, chiefly owing to a redistribution of the work of repair, which is being now undertaken altogether in the dockyards, or by the special ratings on board the nucleus vessels. At the same time it was seen to be desirable to set on foot a reorganization of the dockyards from the business point of view, and to establish the departments on a commercial basis with modern equipments. In this direction a good deal has been accomplished, though it is impossible to say that the desirable end has yet been fully achieved. The system is being overhauled, with the object of conducing to efficiency of work, while removing accretions which in the passage of years had become attached to the organization. The Victualling and Store Departments are now upon a better business footing, and, with the Armament and Coaling Departments, are under the Admiral Superintendent. In place of the former Director of Dockyards, who was chiefly occupied at the Admiralty, there is a Director of Dockyards and Dockyard Work, whose duty it is to inspect the operations, study the systems, and confer with the dockyard officers while visiting private shipbuilding yards and engineering establishments as may be necessary or desirable. In Note D, issued with Lord Cawdor's Memorandum (*Naval Annual*, 1906, p. 362), the reorganization was generally described, and during last year the new system was put into operation throughout the yards, surveys of stock being made, standards revised, and material liable to get out of date reduced. It has been realised that the dockyards and engineering establishments were not up to modern requirements, nor upon the level of equipment which has been attained in the great private yards of the country. Accordingly the whole of the equipment, machinery and power systems have been surveyed or overhauled, and modern plant and appliances have been introduced in new and spacious engine shops, with the object of reducing expenditure and increasing speed and accuracy of work. At Portsmouth the obsolete machinery has been cleared out, and now the shops in character and fittings are the finest in England. Patterns have been standardized and the work is simplified, expedited and made more accurate. Labour-saving appliances have been adopted, and from a central station electric power is supplied throughout the yard, as is pneumatic power, for the operation of new appliances. Economy of labour is effected through the new equipments, and the use of electric, hydraulic and pneumatic power, and the expenditure is therefore less. The rapidity with which the Dreadnought was built is evidence of what can be achieved at Portsmouth Dockyard, though it may be unnecessary to repeat such an instructive *tour de force*. Devonport is upon the same high level, and there also a great central electric station has been established, whereby the whole yard is supplied with power and light. The modern equipments have added enormously to the value of the establishment, while the opening of the Keyham extension makes Devonport a formidable rival of Portsmouth. The other establishments, with, perhaps, the exception of Pembroke, have felt the same impulse towards greater utility.

Defects and repairs.

It is impossible to pass from the consideration of the state of the dockyards without entering a little into the vexed question of the defects and repairs of warships. An examination of the Navy Appropriation Accounts of past years places beyond doubt the extravagance of expending large sums upon obsolete or even obsolescent vessels. The money devoted to the maintenance and repair of ships like the Conqueror, the old Dreadnought and the Sultan appears to us now in the light of absolute waste. If such errors are to be avoided it becomes therefore a matter of the utmost importance for the Admiralty to allocate wisely the sums available for repairs. Here is the source of the truest economy. Perhaps no part of the policy of the present Board of Admiralty has been so freely criticised as this of the repair of defects in ships of war. The vote for maintenance and repair has been cut down, and it has been asserted that in this important matter the Fleet was being allowed to fall into a deplorable state, and that the dockyards were encumbered with vessels awaiting the repairs they needed. The great assembly of the fleets at Lagos, including many vessels with complements completed from their nucleus state, appears to be a conclusive answer to this stricture. At least, it may be said with confidence that the fighting elements of the Fleet have not suffered in any degree whatever, and the Parliamentary Secretary of the Admiralty has denied that there is any undue accumulation of repairs. The subject is obviously one of extreme complexity, and perhaps only the future can set the seal on the wisdom of the present. There may be, for example, obsolescent vessels still possessing a certain value as being fit to strike blows in the final stage of a war, in which the powerful vessels may have been sunk or driven to port for repairs. In conceivable circumstances such vessels might be brought out and might actually suffice to hold command of the sea. Should they not therefore be maintained in a state of complete repair? To this question no answer can be returned here, for two considerations at least would have to be taken account of. Are our possible adversaries likely to be in a fit state to enter upon hostilities within the period in which these obsolescent vessels will retain a certain potential value? And again, if war should break out, will it not be possible to repair and refit these vessels in time to make them useful? In the meanwhile will it not have been better to spend money on actual fighting ships which may at the very beginning deal smashing blows at the enemy, and make it quite unnecessary for us to equip the older vessels in our ports?

These suggestions are made with the object of showing that even an accumulation of repairs required in the older vessels would not necessarily be a condemnation of Admiralty policy. Obviously, everything depends upon policy—the fighting policy of the Admiralty and the policy of maintaining a continuity of regular work in the dockyards. Of these matters, or, at least, of the first and most important of them, the Admiralty alone can be the judge. One thing is certain, and it is that the worst thing in the world is for a ship to be allowed to fall into disrepair while in commission when her own artificers could execute the repairs. Human nature being what it is, there may be a certain tendency to permit this state of things by faults of omission, so that longer time may be spent in harbour, as in the bad old days, in which ships required to be thoroughly overhauled almost whenever they arrived in port. The system of nucleus crews is doing a good deal to obviate this state of things. The essential thing is to make good defects detrimental to fighting efficiency without delay, and to carry out other repairs as opportunities occur. In these matters commanders-in-chief must necessarily have considerable discretion left to them, making ceaseless efforts that ships shall be maintained in activity until they actually become obsolescent. In regard to the actual question in dispute—the alleged accumulation of necessary repairs in the dockyards—it may be noted that the bringing home of ships from foreign stations in larger numbers has thrown a great deal of work upon the dockyard hands, while the yards at the same time have been full of shipbuilding work. Meanwhile, in relation to the reorganization of the Fleet in 1905, and in pursuance of a recommendation of the Naval Establishments Committee, the normal number of men to be employed in each dockyard had been fixed, and has been worked down to. These circumstances may suffice to explain the situation which has called forth so much comment.

Ship-building policy.

Upon the subject of shipbuilding policy, which is the last to be treated here, very little shall be said, because it is fully discussed elsewhere in this volume. But the reflection forces itself upon us that though we are now well placed in regard to the two-Power standard, and though the Dreadnought seems to have arrested the shipbuilding of other Powers, we are likely soon to be called upon for redoubled efforts. For the relaxation in the building of battleships is but temporary, and is now coming to an end. It has been due to the necessity imposed upon foreign Admiralties to gauge the conditions of the future, to estimate the tendencies and possibilities of naval construction, and to propose plans for their new ships. The Dreadnought has outclassed all other battleships. Shall we not have to maintain our two-Power standard in ships of the Dreadnought class? And perhaps the Dreadnought herself does not mark the end of an era in shipbuilding as she has marked its beginning. Indeed, her successors are to be somewhat larger still. Thus, shipbuilding policy presents problems of the utmost complexity and magnitude to be solved in the near future.

If there had been space much more might have been said as to the appointment of the Inspector of Target Practice, and the astonishing progress made in shooting; to the destroyer and torpedo boat service now placed under a flag-officer, making this organisation ready to strike; the development of the submarine flotilla and service with the same object; the establishment of a special mine-laying service; and a complete reorganization of the auxiliary service of ammunition and store ships, distilling and hospital ships, cable-laying vessels, armed mercantile cruisers and others. The general impression received from this survey will be one of very strenuous work on the part of the Admiralty in many branches of naval administration. Difference of view there may be as to certain reforms which have been introduced, but it will be generally admitted that the Navy has been rendered in most respects far more efficient and better prepared for war.

CHAPTER X.

THE LAWS OF THE NAVY.

THE KING'S REGULATIONS AND ADMIRALTY INSTRUCTIONS.

Periods of change.

It is a commonplace of naval history that at all periods of transition, when a long established system is passing away and the beginnings of another order are becoming apparent, there occur certain phenomena which partake in character neither of the past, which has fulfilled its purpose, nor of the new growth which is to replace it. Indeed, it is only natural that as such periods must be largely experimental, they should be accompanied by many novel circumstances, and that these, while for the moment they seem likely to fit the new conditions, yet under the test of time and experience may be shown to be unsuitable or inappropriate. These phenomena in naval affairs reveal themselves primarily in a material aspect, and are most obvious in such matters as the design and fitting of ships, of guns, etc., with other equipment and the like. They have their complement and counterpart, however, in the laws and regulations which affect the personal side of the Navy, and which are often made necessary by or through their advent or departure. In other words, as changes occur or new developments take place in *matériel*, each of these must bring about complementary changes or developments in the position or training of the *personnel* essential to its ultimate and best utilisation for the fighting efficiency of the Fleet.

The last half of the nineteenth century was indubitably an epoch of this kind. Sails and spars for motive power, smooth-bore ordnance and spherical shot for offence, with oak and elm for construction, had not wholly disappeared, while at the same time the line of modern advance in science had far from fully revealed itself. That was a period of experiment in many directions, and much which has since been demonstrated to have little or nothing in character with the new development has already disappeared into the limbo of things forgotten or has been stored away in museums, where it will still possess an interest for those who would investigate the machinery of the past. But the laws and regulations which had their rise in the changed conditions cannot in the nature of things be dealt with in quite the same manner, and yet it is in a way indispensable that the student of sea affairs should be able to trace their cause and effect if a proper knowledge of the sequence, devolution, and consequence of naval administration is to be obtained. It is here intended to

Forgotten laws.

indicate where the materials for such a purpose may be found, and the fact that a new issue of the "King's Regulations and Admiralty Instructions" was made last year seems to be a good reason for devoting a chapter in the *Naval Annual* to this subject.

New demands on officers and men.

There is another purpose to be served by an examination of the new volume, inasmuch as it should be both interesting and useful to discover if possible in what way, if any, recent evolution in the *matériel* of the Fleet has had an effect in altering the position or prospects of the *personnel* in its different branches. It is known, of course, as indicated by Lord Selborne in his famous Memorandum of December, 1902, that the entry and training of officers and men has been radically reorganised in accordance with the demands of new methods and new material of naval war. He pointed out that whereas in the old days it sufficed if a naval officer were a seaman, now he must be a seaman, a gunner, a soldier, an engineer, and a man of science as well. Not only, too, had the need for a more general scientific training of the officers become apparent, but the circumstances of the time required that the seamen should have opened to them a career commensurate with their changed character, and that their training and education should be as fully adapted to the work they have to perform as that of the officer. He outlined proposals in his Memorandum designed to improve the position, prospects and pay of the warrant officers, chief petty officers and men of the Fleet. We may, therefore, expect to find in the new regulations signs of the reforms and improvements in the conditions of service concurrently with the other changes making for increased fighting efficiency. If, as the country has been led to assume, there are sound reasons for believing the increase in fighting efficiency has been obtained for less money, this must be due in the main to scientific progress in engineering matters, including in this term the application of electricity, etc., to the use and equipment of ordnance, with other advances of a scientific character like the introduction of the water tube boiler and the turbine engine for propulsion. All these improvements necessitate skilled labour of a higher character, which should be better paid, not only in cash, but in other ways, tending to remove as far as possible the disabilities of ship life, and to raise the standard of living afloat approximately nearer to that on shore. The progress of science as applied to naval warfare should not only show a corresponding advance in the rates of pay of specialists, but a general amelioration of the conditions of life in the new Navy.

Better pay for skilled labour.

Articles of war.

By way of preface to our survey it seems to be advisable to say something about the genesis of the regulations which govern the Navy and which are to be found in the volume under review. Naval law may be said to have received its first codification at the time of the Commonwealth. Previous to that time, and, indeed, for many years afterwards, special instructions of a disciplinary character were issued upon particular occasions. But on December 25, 1652, as Mr. Oppenheim has shown, the rules which had been issued for the Earl of Warwick's fleet in 1649 were made the basis of regulations and orders enacted for the government of the whole Navy. These were the first Articles of War. There were thirty-nine articles, thirteen of which prescribed death, and twelve more prescribed either death or a lighter punishment alternatively according to the view taken by the court trying the offender. In 1661 the Articles of War were amended, and until 1730 every Commander-in-Chief with the sanction of the Admiralty issued his own code of instructions. In that year, the volume of material provided by the accumulation of lapsed codes was in some measure digested; many additional instructions were set forth; and in 1731 there appeared the first issue of the "King's Regulations and Admiralty Instructions." It was not, however, until 1749 that there was brought in "a Bill for amending, explaining and reducing into one Act of Parliament the laws relating to the Navy." One of the results of this Bill, had it been passed in its original form, would have been to subject officers on half-pay to martial law. The measure was in consequence strongly opposed and petitioned against, and as a result the obnoxious clauses were withdrawn. The Bill was then passed and the older laws for the government of the Navy were repealed, and in place of them the first regular Articles of War found shape in the Consolidation Act of George II. 22, based upon the Act of 13 Car. ii. c. 9. In 1749, also for the first time, an Act was passed authorising the Admiralty to grant commissions to flag officers or officers commanding in chief to assemble courts-martial in foreign parts. A further amendment of the Act of George II. was made in 1779 by 19 George III. and this it is which is the foundation of the existing Articles of War, its proper title being the Naval Discipline Act. It was amended in 1861 and again in 1866. The "King's Regulations and Admiralty Instructions" of 1731 have remained in substance the rules of the Navy ever since, but important alterations have been made to bring them into conformity with modern ideas and modern conditions, and for this purpose revision has taken place at frequent intervals.

Half-pay and martial law.

Custom the basis of law.

It will be unnecessary to refer at any greater length to the Articles of War, but it may be pointed out that the thirty-third Article of the Act of Charles II. indicates the source from which the regulations were drawn. Section I. of that Article runs thus: "All other faults committed at sea shall be punished according to the customs used at sea." And in 1749 again, Article 36 reads: "All other crimes, not capital, not mentioned in this Act shall be punished according to the laws and customs used at sea." Mainly disciplinary, the Articles of War enjoin the regular performance of worship on board ship, give power to hold courts-martial, and to administer oaths; the preamble of the Act begins: "It is the Navy whereon, under the good providence of God, the wealth, safety, and strength of the Kingdom chiefly depend." The fact thus affirmed first appeared in a Parliamentary document over five hundred years ago, and the laws which follow it are founded upon custom and usage quite as ancient; they have only been—subject to the maintenance of that strict discipline and unquestioning obedience which is essential to the Service—brought into conformity with the more humane standard of modern times.

Steel's Navy Lists.

There is one other official publication about which, for a reason which will presently appear, something should be said. This is the "Navy List," which in its present form is utilised for the publication of a certain number of the official circulars. Up to the end of the great war there was no official "Navy List," but for many years before that there had been issued every now and again, at the instance of the Admiralty, lists of flag officers, captains, commanders, and lieutenants. These lists gave the seniority and dates of commissions of the officers referred to, but they contained no other information. It was not until 1780 that Mr. Steel, a publisher in the Minories, began to issue periodically a small volume with the title, "Complete List of the Royal Navy." This list contained the names of the ships and their commanders, or little more, but it supplied a want and was well supported and quickly grew in bulk. From six pages, as originally produced, it extended to more than sixty towards the close of the war, when it contained an immense mass of information about the Lords of the Admiralty, the Commissioners of the Navy, the Navy Agents, the ships in commission and reserve, with their armament and date of launch, the names of men of war taken from the enemy, as well as lists of flag officers, captains, commanders, lieutenants, masters, surgeons, pursers, and officers of the Royal Marines. "Steel's Navy Lists," and one or two other lists issued about the same time by enterprising publishers, were not official; but in 1814 the first copy of the "Navy List," published under Admiralty direction, appeared, and has been continued to the present time. It was speedily found that these official lists formed a useful channel for the dissemination of Admiralty instructions, and many interesting and important Orders in Council, or circulars dealing with pay, uniform, qualifications for entry and similar matters, will

Official Navy Lists.

be found in them. Up to the time of the latest revision of the Regulations and Instructions, publication in the "Navy Lists" frequently duplicated what was to be found elsewhere, but now a reference to the publication in the "Navy List" of certain information will be found in the Regulations wherever it seems that this course can be adopted with advantage, and thus matters are simplified and the bulk of the Regulations reduced. For information connected with pay, wages, clothing, and the introduction of new grades and ratings of the officers and men of the various branches, it is absolutely essential to consult the official "Navy Lists," for they alone contain the history of many of the changes which influence naval administration since the date of their issue. Here also will be found information on such subjects as the introduction of ships' libraries, the advent of the engineers, the establishment of the gunnery school, the institution of seamen's savings banks, the evolution of the War College, the abolition of flogging, changes in victualling, the growth of the retirement regulations, and the beginning of continuous service.

The laws of 1731.

It has been said that the contents of what may be called the first edition of the "King's Regulations and Admiralty Instructions for the Government of His Majesty's Naval Service," issued in 1731, are in substance the same as those which are to be found in the volume issued in 1906; but in form they have been re-cast and in detail amended many times. The edition of 1731 was divided into five parts, as follows: Part I. dealt with the duties of flag officers, courts-martial, rank and command, marks of ceremony and respect, colours, and the rules for the appointment of officers in ships abroad. Part II. related to the duties of the captain or commander, discipline, manning, sick and hurt seamen, provisions, payment in case of men being placed on short allowance, slops, pilotage, convoys, salutes and prizes. Part III. laid down the duties of the lieutenant, master, boatswain, master sail-maker, gunner, gunsmith, carpenter, purser, surgeon, master-at-arms, corporal, schoolmaster and cook. Part IV. related entirely to hospital ships, and the department of the Physician of the Navy. Part V. contained the scale of wages, the number of officers and their servants, table money, gratuities to relatives of those slain in fight, gratuities to the wounded, and pensions. The sequence in which these matters and others added to them are dealt with had not undergone material change until the re-casting, which took place in 1879, and even then there was left a remarkable resemblance in form in spite of the enormous increase in matter. In 1893 there was a further revision, when the Regulations were brought up to date; but the issue of new circulars

The new edition.

and addenda proceeded at such a pace and obliged so many material corrections that three years ago Admirals Sir Lewis Beaumont and Swinton Holland were charged with the work of re-casting a fresh edition, and it is to their labours that the volumes issued last year are due. As already intimated, certain matters which appear elsewhere have been omitted altogether, while others which are subject to almost continuous fluctuation and change have been published in an addendum, which is issued gratis with the volume containing the Regulations and Instructions.

The new volume of the "King's Regulations and Admiralty Instructions" contains 668 pages, or, with the appendix and index, 947 pages, while the addenda contains 307 pages, 68 of which are devoted to a Table of Comparison of Numbers of Chapters, Articles and Appendices in the editions of 1899 and 1905. The work is no longer divided into five parts, as in the earliest edition; instead, there are fifty chapters, each of which is divided into several sections, while each section consists of a varying quantity of numbered articles. Chapter I. deals with general regulations, its first article obliging every officer to make himself acquainted with, to observe and obey, and, as far as he is able, to enforce the due execution of the Naval Discipline Act or Acts, the King's Regulations and Admiralty Instructions, and all other regulations, orders or instructions that may be issued by the Admiralty or with their authority; and, further, in all respects to conform himself "to the established customs and practices of His Majesty's Service at Sea." The last article of the same chapter obliges all commissioned officers of the Fleet to have a copy of the Regulations. Another article of the same chapter forbids all persons belonging to the Fleet to write or publish in the papers matter or information relating to the public service. Chapter II. is concerned with ceremonies and distinction. It contains nineteen sections, seven of which have to do with salutes, one with visits of ceremony, four with colours, and the remainder with marks of respect and funeral honours, uniform and medals. Chapter III. deals with "rank and command," the division of the Navy into various branches, the relative rank of officers in the Service, and of those in the sea service with officers in the Army, and the division of the ship's company into classes and ratings. Chapter IV. explains the nomination, appointment, and promotion of officers. Chapter V. the meaning of the various kinds of "Service" and "Time," with regulations referring to the resignation of commissions, and applications for retirement and half pay. Chapter VI. with qualifications, promotions, and the rates of pay which officers on the Reserved Lists shall receive if recalled to active

Writing to the Press.

service. Chapter VII. with the training and examination of officers. Chapter VIII. with the entry, qualification and instruction of men and boys. These eight chapters cover, to a large extent, the matters contained in Part I. of the old regulations, the principal omission being that of courts-martial, which is now given a chapter to itself in connection with discipline, and at the same time "salutes," which were in Part II., have been placed earlier in the work under "Ceremonies."

Ceremonies and Courts.

Chapter IX. contains "Instructions to Officers in general," and the next seven chapters are devoted respectively to instructions to Commanders-in-Chief and officers in command, flag officers not commanding-in-chief, the captain of the fleet, captains, lieutenants and sub-lieutenants, the gunner, boatswain and carpenter, and the chaplain and naval instructor. Chapter XIII., containing the "Instructions to Captains," contains no less than eighteen sections, and nearly a hundred articles, many of them very long. Following these are four chapters, XVII. to XX., devoted respectively to courts-martial, courts of inquiry and naval courts, discipline and police. In the first section of the chapter devoted to Discipline there are articles forbidding the employment of the ship's company on Sundays on any work or duty other than that which may be strictly necessary for the public service, obliging the performance of Divine Service on board every ship on every Sunday, and Morning Prayers on other days, as well as giving liberty to those who entertain religious scruples in regard to attending the services of the Church of England to absent themselves from those services, and for opportunities to be given such persons either to attend services by ministers of their own denomination on shore, or afloat if practicable. Another article in this chapter forbids duelling, and prescribes the authorised procedure in the case of any officer of the fleet being called upon to act as second or friend to an officer intending to fight a duel. Another paragraph provides that the Articles of War are to be displayed in an accessible part of the ship for the information of her company; while yet another forbids women to reside on board or take passage in a ship except with the express permission of the Admiralty. In this chapter also there are full descriptions of all the punishments which may be awarded, and by whom, and perhaps it is that in this respect the present regulations differ more widely than in any other from those of older date. Chapter XXI. deals with the certificates of character and conduct, and certificates of service and competency of officers and men. Chapter XXII. with messing, cabins and canteens, the formation of the officers' messes, the obligation of each officer to join his proper mess, and the general administration of the

Discipline and punishment.

messes being laid down. In the section dealing with the messing of the ship's company it is stated that the recognised meal hours are to be five in number, and the aggregate time allowed for them three hours thirty-five minutes. Chapter XXIII. deals with leave of absence. All these last-named matters, it will be found later on, the authorities have had under revision recently, and several important changes have been made in these regulations.

Duties of specialists.

To a certain extent it may be said that the chapters just described correspond to Parts II. and III. of the first issued regulations, but we now come to those relating to the duties of specialists. Chapter XXIV. is devoted to the gunnery and torpedo branches, its sections ranging in contents from the qualifications and duties of officers and men to the methods of carrying out gunnery trials. Chapter XXV. similarly relates to the engine department, with the duties and qualifications of officers and the arrangements to be made for the provision and storage of coal. Chapter XXVI. deals with navigation and pilotage, and directs that the navigating officer under the direction of the captain is to have the charge of the navigation of the ship, while "the captain is to exercise a very careful discretion before endeavouring to make unlighted or dangerous land, or to get into, or close, difficult unlighted ports during darkness. Except in cases of emergency or other necessity he should consider whether, instead, the service he is employed upon will not be more certainly performed by standing off until daylight." In the section dealing with the duties of the navigating officer it is an instruction to him that "whenever the ship is approaching the land or shoals, he is to be upon deck and keep a careful look out, and he will attend to the soundings until the safety of the ship's position is clearly ascertained and secured." Chapter XXVII. contains the regulations for preventing collisions, the lights to be carried by torpedo-boats, &c. Chapter XXVIII. deals with the assembling and defence of convoys, and other matters connected with the duties of convoying officers and the masters of ships being convoyed. Chapter XXIX. defines the classification, armament, and complement on His Majesty's vessels. Chapter XXX.—"Commissioning and Equipment." Chapter XXXI.—The preservation, repairs, and docking of ships. Chapter XXXII.—Paying off, and the method of procedure in dealing with the stores and fixtures of a ship, according to the category of reserve in which she is to be placed.

Convoys and complements.

Royal Marines.

The Royal Marines are dealt with in Chapter XXXIII., the various sections referring generally to the corps, instruction and training, prizes for shooting, the band, arms and clothing, &c., discharges and re-engagement, Marines employed on special duties, classification for conduct, &c., service certificate, good conduct badges, medals and gratuities, and pensions for service, wounds, &c. The next Chapter contains the regulations to govern the land forces when embarked for passage, the use of hired transports, and the regulations to be observed in respect to landing and embarking troops and Army stores. In regard to the latter it is observed that "while the foregoing are the general rules governing the division of duties between the Navy and Army, it is to be clearly understood that each Service is working for a common object, and will render the other all the assistance which lies in its power."

Medical and accountant branches.

The remaining chapters correspond to Parts IV. and V. of the ancient Regulations. One, a rather long chapter necessarily, is devoted to the Medical Branch, and the remainder, from Chapter XXXVI. to Chapter L., to matters pertaining to the duties of the accountant branch. In addition to the general instructions to the accountant officer, pay and allowances for officers and men; the books to be kept, and returns made in connection with pay and cash accounts; the victualling instructions, as well as the purchase of stores and provisions, surveys and stocktaking; prizes, prize-money, and prisoners of war; quarantine and customs' regulations, and salvage, the three last-named chapters, although intimately connected with the duties of the accounting officers, contain also instructions for the other officers of His Majesty's ships in connection with the subjects they refer to. As already mentioned, matters which are subject to annual revision have been transferred to a separate volume entitled "Addenda, Part II." In many cases complete articles, especially those which refer to the entry, training and examination of officers and men, and to pensions, have been transferred complete to this Addenda; but in other cases a brief synopsis of the subject of each article transferred will be found in its proper position in the "King's Regulations and Admiralty Instructions."

Results of the changes.

Having thus briefly summarised the contents of the "King's Regulations and Admiralty Instructions," we may now conduct our examination more closely and in greater detail for the purpose with which we started out. Since 1902 there has been in every department of the Service what is somewhere described as "relentless reorganization." With the need for reform it is not proposed to deal here. Our object has been to collate and compare the old regulations with the new which have accompanied and made a part of this reorganization in order to note the effect of the changes upon the conditions of life in the Fleet. As a result of our examination it should appear whether the reorganization and reforms have had a beneficial effect or otherwise, not only upon the efficiency of the

Service, but upon the position and prospects of the officers and men. It is doubtless true that some of the reforms, and particularly those concerned in the redistribution of the Fleet, may have deprived a few officers of advantageous appointments or disturbed their domestic arrangements. But these matters, which can only affect a few, are trifling compared with the changes which appear to have had directly the opposite effect upon the many. Of such it may be mentioned that the men have had something near a quarter of a million sterling added to their pay; one item alone being £75,000 a year for increase in pensions to petty officers; another £47,000 a year gives the men a food allowance when on leave; while similar concessions make up the balance. It may be mentioned also that a circular to which we shall refer shows that no longer do the officers pay for the bands out of their own pockets, and have thereby been saved something like £25,000. The system of nucleus crews which has been introduced may also be regarded in this aspect. It gives to the officers service at home counted as sea time to an extent which they never had before; while the men who were formerly spending their money with foreigners in many small ships in small ports, where they had to pay dearly for those luxuries, which are almost necessities to the man-of-war's man to-day, now have the opportunity of buying these articles cheaply in their own ports, benefiting both themselves, their families and their countrymen. Take again the matter of two-year commissions, another introduction of late, and a great boon to officers and men. About half the Fleet in commission is now relieved annually, and for two years at sea, one year is spent at home. More care is taken also with regard to the drafting of men who are near the expiration of their engagements, and no man is eligible to hold an appointment in the harbour ships or shore establishments more than twice in his career—once at the termination of his first period of service, and once during his second period. The Naval Service is conservative to a degree; but the loyal manner in which it has received the numerous changes that have been made is proof that it has recognised how along with increased fighting efficiency there has been consistent, strenuous and determined effort to improve the position of the officers and men.

Additions to the men's pay.

More leave to officers.

Dealing with the changes which beneficially affect the officers, reference may be made to the many more appointments now open to those of flag rank, thus affording larger opportunity for them to gain experience in the handling of fleets and squadrons. The advantage is thus both to the officer and to the Service. Intimately connected, too, with dockyard reorganisation is the increase in the position and

Changes affecting officers.

responsibility of the Admirals-Superintendent, whose authority, as representing the Admiralty, must be supreme. The victualling, armament, coaling and store departments, as well as the dockyards, are now under the supervision and administration of the Admiral-Superintendent. Moreover, the functions of this official being mainly general direction, there has been appointed to assist him in exercising the necessary supervision of the business of all the establishments a post-captain as a deputy-superintendent, and other officers acquainted with the requirements of the fleet. An annual course of instruction in strategy and tactics for flag officers has also been established, and officers selected to attend this course receive the difference between their full and half pay during such attendance, in addition to allowances for messing and lodging. In December, 1903, changes were made in the regulations governing retirement for non-service, optional retirement, the retired pay of captains, civil employment, the period during which officers may be employed on shore, and the establishment of flag officers. The general result of these changes has been to increase the number of officers on the flag lists, to accelerate the periodical increases made in the number of officers in the various ranks, and generally to lower the average age of officers in the higher grades. Flag officers, captains and commanders have the option of retiring at any age at the discretion of the Admiralty on a new scale of retired pay. At the same time civil employment at or under the Admiralty and certain other employment specially defined are to be considered as service to prevent compulsory retirement, while no officer will be allowed to hold an appointment that may be defined as "shore employment" for more than five consecutive years, or, in the case of members of the Board of Admiralty, for more than seven consecutive years, except in special circumstances. The number of flag officers on the Active List was at the same time increased.

Flag officers.

Post captains.

As in the case of the flag officers, so with the captains, especially those recently promoted, many more opportunities for employment are now given. It used to be said that commanders frequently refused promotion because they could not afford the long periods of half-pay which were commonly the lot of the junior captains. There has been great improvement in this respect. By changes made in the regulations in 1904 and 1905 service in a ship commissioned for service in the Reserve is to be treated as regards promotions, allowances, etc., as follows: Service will count as "service in a ship of war at sea." Flag allowance, navigating allowance, charge pay and store allowance will be paid at the usual rates for, and under the regulations applicable to, sea-going ships; captains commanding battleships and first-class cruisers will be paid command money at the rate of 12*s.* per day, to be increased to 18*s.* on the ships being provided with full crews. There have also been improvements in the retired pay of captains. Last December the commander appointed as executive officer on board the flagship of a Commander-in-Chief or other flag officer was granted a flag allowance similar to that payable to certain other officers in flagships, and the new scale was added to the regulations. In regard to the establishment of gymnasia, the institution of a navigating school, and the revision of the regulations governing the selection and training of lieutenants in gunnery and torpedo, with similar changes a general improvement in the prospects and fresh openings for employment have been found for officers of the rank of commander and lieutenant. A commander has been appointed superintendent of gymnasia, and lieutenants have been selected for physical training duties. Increased rates of allowances for gunnery, torpedo, navigating and signalling officers have also been issued. Lieutenants and sub-lieutenants of the navigating branch may now be appointed as temporary surveying officers on board His Majesty's surveying vessels, and will receive special pay while serving in such posts; moreover, those who do not wish to remain in the surveying service may revert to navigating duties in the Fleet, and the fact of their having undergone this valuable special training will be noted in their favour at the Admiralty. Lieutenants of thirteen years' service and upwards have had their pay increased. It is unnecessary to do more than mention that various changes have been made in the regulations connected with the entry and training of junior officers, in order to bring these into accord with the system inaugurated in 1902. But changes have also been made in the manner of conducting the instruction and examination of junior officers with the object of improving the conditions under which these are carried out, and the provisional system arranged for has been most satisfactorily reported upon.

Commanders and lieutenants.

Junior officers.

Turning to the non-executive officers, it is beyond dispute that the position and prospects of the engineers, both those who are at present serving under that denomination and those to come, have been considerably enhanced by recent changes. It is generally recognised that the alterations which have been made in the rank and style are but temporary, and that before long there will be complete assimilation with the executive branch. The new scale of pay for existing engineer officers was incorporated in the Regulations in April, 1903, with improvements in relative rank, and, as is well known, a Committee has recently been sitting to consider how a further amelioration of the conditions of service of the present engineers can be carried out. In order to accelerate the attainment

Non-executive ranks.

of relative rank with the Executive Commander, earlier promotion to Engineer Commander was introduced, and although it did not carry with it any benefit in pay it conferred a financial advantage as regards pensions to widows. In November, 1903, the rank of Paymaster-in-Chief on the Active List, with relative rank as Captain, R.N., of three years' seniority, was established, and a number of promotions to this rank have since been made. A special scale of full and half pay for these officers, and flag allowances for officers of the engineer and accountant branches, were, at the same time, incorporated in the Regulations. The promotion of the various grades has been accelerated and the promotion of accountant officers on the Retired List established. The Regulations for the entry, service, and retirement of chaplains for the Navy have also been revised and the conditions of their service modified beneficially. The system of enabling them at the discretion of their Lordships to withdraw from the Navy with a gratuity has been extended to all officers irrespective of their age on entry. These gratuities, which begin at £500 after four years' full pay service, increase gradually to £1600. The privilege of withdrawal on these terms is to be allowed as a rule only when an officer is unemployed or serving at home. Under special circumstances, however, it may be permitted in the case of an officer serving abroad; but a rule has been laid down that no candidate shall be placed on the Established List without a preliminary period of four years' service in the Fleet. Authority has now been given for chaplains to be granted an episcopal license, and the Chaplain of the Fleet has been granted the ecclesiastical dignity of archdeacon.

Engineer officers.

Paymasters, chaplains and surgeons.

The medical officers, like the engineers and paymasters, have been given earlier promotion in order to hasten the attainment of relative rank; and, although this arrangement has not conferred any immediate increase of pay, it carries financial advantages in other respects. Moreover, the scale of pay for medical officers generally has been improved, and a special salary established for the Director-General of the Department. Other changes relate to special promotion, to rank of staff-surgeon, and the extension of hospital allowance, charge pay, and flag allowance in certain cases.

Benefits to officers generally.

Among alterations recently made which affect officers generally may be mentioned the revised system for providing mess traps, which has been introduced, and by which all officers now receive a free supply of mess traps and replacements (within certain limits), the percentage charges being abolished. Charges are no longer made for cabin furniture, and the arrangements for lighting officers' quarters have been taken over by the Admiralty. The cost of entertaining foreign officers has been made a charge upon the public purse, thus removing a grievance of long standing. Reference has already been made to the provision of bands; but it may be noted that increased facilities have been provided for the study of foreign languages, and retired officers who are voluntarily re-employed may now be promoted. Hitherto, also, while the Regulations provided for information being telegraphed to the Admiralty whenever an officer is invalided or dies on service, no arrangement existed for communicating the fact of an officer being seriously ill. Now, however, whenever there is cause for grave anxiety, the fact is to be reported by telegram in order that the relatives may be immediately informed.

Petty officers and men.

So far, our survey of the changes in the "King's Regulations and Admiralty Instructions" has been confined to those affecting the officers, and, pursuing the investigation in the case of the men, it is clear that during the period under revision questions connected with the rating, advancement and conditions of service of petty officers and seamen have been constantly under consideration, and many improvements of various kinds have been adopted. To bring out the incidence of these changes clearly it has been deemed advisable to take the Orders in Council, Circulars, &c., incorporated in the regulations, chronologically, and then to re-divide the matters into two large groups—first, those which affect pay and position; and, secondly, those having regard to victualling, clothing and the like; thirdly, as far as possible, to separate matters affecting one class from another.

The seaman's prospects.

Earliest in point of date, so far as the seamen class is concerned, are the benefits accruing from the introduction, extension and development of the scheme of physical training in the Fleet. First, an allowance of 6*d.* per day and the rating of petty officer, first class, was made to men who qualified as gymnastic instructor; then gymnastic instructors were divided into three classes, with allowances of 2*d.*, 6*d.*, and 1*s.* per day respectively, and appointments as Staff Gymnastic Instructor and Senior Staff Gymnastic Instructor, with allowances of 1*s.* 3*d.* and 1*s.* 6*d.* per day, were established. Towards the end of 1903 there was a revision of the scheme of training of seamen in gunnery and torpedo, by which the pay and position of the higher gunnery and torpedo ratings was improved, a new scale of allowances being laid down. The position of the petty officers in their relations to the lower ratings has been under consideration, and instructions issued for its improvement. When classes of instruction are formed petty officers are no longer to be mixed up with the other men, and when addressed or spoken of they are always to be given their proper title. The changes consequent upon the proposals of the Ratings Committee do not appear to have been finally authorised in the Regulations, but it is clear that they are mainly directed towards the improvement of the pay and position of the petty officer, especially by the extension of the progressive scale of pay. The substantive pay of the seamen class generally is to be improved, the men being required to possess certain qualifications for which non-substantive pay was previously given. In 1904 a uniform system of advancement to the grade of Chief Petty Officer was adopted. Finally, advancement from Warrant to Commissioned rank of Lieutenant for long and zealous service has been authorised, with a progressive scale of full and retired pay, and power has been obtained to give the rank of Lieutenant to Commissioned Warrant Officers when pensioned.

Warrant and petty officers.

In the matter of the Signal Branch the numbers allowed to qualify for the non-substantive rating of Higher Standard have been increased, and two classes, with allowances of 3*d.* and 6*d.* per day respectively, have been established instead of the previous class, which received 3*d.* per day. In this branch also the system of progressive scales of substantive pay for Petty Officers and men, and the improvement of the position of the Petty Officers are aimed at in the proposals of the Ratings Committee. It has been further announced that a separate Wireless Telegraphy Branch will be established shortly with a similar scale of pay to that of the Signal Branch, and good prospects of promotion.

Engine-room department.

The changes which have taken place in recent years in the *matériel* of the Navy has led to a great and increasing demand for highly skilled men. This has affected all classes, but particularly the engine department, and we find, therefore, that in regard to the engine-room ratings there have been many improvements both in pay and position. The clothing gratuity to newly entered stokers has been increased from £3 10*s.* to £10. The pay and position of the stokers has also been improved by the establishment of the boy artificer class, with progressive pay, and of the rating of mechanician with rank of Chief Petty Officer, and a progressive scale of pay. A little later a revised scale of pay was established for the stokers, including an extension of the system of progressive scales, and at the same time, as will be seen from the important circular issued on April 7, 1906, on the training and organisation of engine-room ratings, the position of Stoker Petty Officers was improved. Next we come to the engine-room artificers, their pay and prospects of promotion being improved by the establishment of the commissioned rank of Chief Artificer Engineer, with a progressive scale of pay; while advancement of Artificer Engineers and Chief Artificer Engineers to the commissioned rank of Engineer-Lieutenant was authorised, with a progressive scale of full and retired pay and pensions to widows. In the following year, instead of the relative or honorary rank of Lieutenant being conferred on the commissioned Warrant Officer when pensioned, power was obtained to give the actual rank of Engineer-Lieutenant to Chief Artificer Engineers on retirement, the pensions and compassionate allowances to their widows and children being the same as in the case of Junior Lieutenants of the executive branch.

The Artisan ratings.

So far as the Artisan ratings are concerned, their position has been improved in a similar manner to that of the Artificers, Warrant Officers being promoted to the rank of Carpenter-Lieutenant either on active service or when pensioned, with increases of pay allowances and pensions to widows. In this connection also may be mentioned the establishment of Boy Shipwrights, of Electricians, and a Reserve of Armourers from the seamen and Marines. Then we come to a miscellaneous group. The servant question is as much in evidence afloat as it is ashore, and in October, 1903, several alterations in the Regulations were made with a view to improve the position of domestics in the Fleet. In regard to the conditions in connection with leave, there was a change for the better, and power was obtained to bear these men on the books of a depôt for three months after discharge. Further new rules refer to their pay when invalided, to dress gratuities, and to pensions, while it has also been proposed by a Committee which sat to investigate this subject that they should be granted good conduct pay. The clothing gratuity to the sick berth staff on entry has been increased from £2 10*s.* to £9. Ship stewards' boys and boy writers, instead of receiving a clothing gratuity of £5 on entry, are to be supplied with the regulation kit. An improved scale of pay has been drawn up for the cooks and their assistants, and the whole question of naval cookery has been inquired into and reported upon by a Committee, and recommendations have been made for perfecting the organisation of this department and for improving the appliances and general cooking arrangements in the ships. A circular of September, 1904, established the commissioned rank of Chief Schoolmaster, with full pay at the rate of 11*s.* per day, a considerable advance upon that of the Head Schoolmaster. The relative rank of the Chief Schoolmaster will be with Chief Carpenter, according to the date of commission, and pensions, widows' pensions, and compassionate allowances for children have been readjusted. In the Coastguard, too, there has been a revision of pay of Divisional Chief Officers and Chief Officers of Coastguard.

School-master and cooks.

Concessions to seamen generally.

The following concessions concern the men of the Fleet generally. The period for receiving applications for granting pensions to widows of men killed in action has been extended from one to two years after the man's death, and similar concessions have been made as regards Greenwich Hospital pensions. The pensions of all Chief Petty Officers were improved in February, 1903. In the same year the list of places outside of the United Kingdom in which allotments may be paid was largely extended, and two years later the allotment reserve was abolished, thus removing a frequent cause of acute distress to the men's families. Under the arrangement previously prevailing men who made monthly allotments to their relatives at home had a portion of their wages retained as a security against loss by death, desertion, &c. This system of withholding the earnings was a cause of much dissatisfaction, because the men's families had to wait some considerable time after a ship had left for a foreign station before they could begin to receive support from the regular allotment. Continuous weekly payments have been instituted and "dummy weeks" abolished.

In order, too, that the relatives of men or boys dying while on foreign service may receive early notification of the fact, the Admiralty have decided that in future the death of any man or boy serving afloat, together with the cause of death, is to be at once telegraphed to the Admiralty in the same way that the death of an officer is communicated. In 1906 it was decided to pay an allowance of 8½*d.* per day in lieu of provisions to all warrant officers and men of the Navy and Royal Marines when on leave for more than forty-eight hours. Seamen or Marines holding the conspicuous gallantry medal or distinguished conduct medal, unaccompanied by an annuity, shall at the discretion of the Admiralty be awarded a gratuity of £20 on discharge at the completion of their term of active service, or on being invalided from the Service, or on promotion to a commission. The regulations governing discharge by purchase have also been amended.

Victualling and canteens.

Even more important, perhaps, than the concessions in relation to pay and improvement in the position of the seaman to be found in the "King's Regulations and Admiralty Instructions" are the reforms in connection with victualling, clothing, &c. The Committee recently appointed into the Canteen and Victualling questions have made their report, and it is now under the consideration of the Board. It is known, however, that the recommendations of the Committee are in the direction of ensuring lower prices and a better quality of supplies in the canteens, and also of removing the opportunities for bribery and mismanagement which have been alleged to exist under the present system, and which naturally operate to the disadvantage of the ship's company generally. The changes, if they are approved, will, it is considered, enable the men to obtain the best value possible for their money. The recommendations in regard to victualling will have the effect of considerably simplifying and improving the messing arrangements afloat, and thus adding to the comfort and general well-being of the ship's company. As was recently said, "It is not a bit of use having the Fleet at all if you don't feed it, and feed it well." In 1903 a revised scale of victualling was introduced, and the installation of bakeries in the ships is proceeding rapidly. This change is giving general satisfaction, and the men much appreciate the supply of fresh bread daily. Fresh pork is now supplied at many English ports, to provide a greater variety in the fresh meat ration, and witnesses before the Victualling Committee spoke in high terms of this innovation.

Uniform and tailoring.

The recommendations of the Seamen's Clothing Committee have been approved, and Circular Letters on the subject have been issued conveying the decisions to the Fleet. Briefly, these include a simplification of uniform, the value of the compulsory kit being reduced from £9 5*s.* to £6 15*s.*, a reduction of 27½ per cent. The cost to the seaman of the upkeep of his uniform will therefore be much less in future, and it is estimated that as a whole the men of the Fleet will save £40,000 per year by this change. The patterns of several articles have been improved. Every man on joining a new ship or establishment, necessitating a change in the name of the ribbon on his hat, will now be given two hat ribbons free of charge. In future, too, ready-made uniform will be supplied in place of the present system of supplying the materials only, under which men make their own arrangements for getting the garments made up. This change will ensure greater accuracy in uniform, and will be of pecuniary advantage to the men, because the articles purchased by Government will be less expensive. The Admiralty will also provide a supply of oil-skin suits, sea boots, and watch coats for wear by men on exposed duties, and special boots for men in the stokeholds to save wear and tear of their own boots. With the reduction and simplification of the kit, and the supply of ready-made uniform, many of the difficulties which have hitherto existed with regard to questions of uniform will disappear, and the men should have no difficulty in keeping themselves properly dressed.

Cooking and mess traps.

Reference has already been made to the proposals made by the Cookery Committee for the improvement of the cooking of the men's food; the question of the mess utensils supplied for the use of ships' companies has also been considered. The mess utensils of the Chief Petty Officers have been improved, and these ratings are now supplied with a superior class of mess traps suitable to their position, with periodical replacements. The scale of mess traps for the general use of ships' companies has been revised, and articles substituted or improved to bring them into line with present day requirements and to increase the comfort of the men. Similarly, improvements have been made in seamen's hammocks and kit bags, and new patterns, the last named of brown water-proof canvas, have been introduced.

Tobacco and newspapers.

Manufactured tobacco has been introduced into the Service for issue side by side with the ordinary unmanufactured leaf and strip tobacco. The new tobacco is much appreciated, especially by the younger men, who do not generally care for the strong Navy tobacco, and who have hitherto been put to the extra expense of buying a milder tobacco from the shore at a much higher price than the one shilling a pound at which tobacco is issued on board ship. The system of supplying newspapers and periodicals for the use of the ship's company has been extended to the whole Service; prior to April, 1906, issues of newspapers and periodicals were confined to ships on foreign stations and in the Channel Fleet. With a view also to encouraging in the Fleet an interest in national and naval songs, the Admiralty have issued to every ship copies of a volume containing the words and music of songs specially compiled for this purpose.

In many other ways the comfort of the men on the lower deck of our ships of war has been studied in the direction of making their quarters more habitable. Hot and cold baths are now supplied in many ships, the lavatory accommodation has been improved, and sanitary appliances fitted; much attention has been paid to the subject of ventilation, and electric fans are in common use. In addition to bakehouses, there are cold storage rooms, refrigerators and ice-making machinery. Moreover, the medical officers hold special classes for instruction in first-aid, the equipment and appliances of the surgeons have been entirely modernised, and patent arrangements are supplied for dealing with the sick and hurt. If, as the estimates show, the provision of these arrangements, tending to the civilisation and comfort of the ships' companies, is accompanied by a rise in the votes for wages and victualling, the addition will not surely be grudged by the nation.

The Marine Corps.

In our summary of the contents of the "King's Regulations and Admiralty Instructions" it was stated that a very long chapter necessarily and properly was devoted to the Marine Corps. In collating this chapter with the previous "Regulations and Instructions" several important alterations are discovered of a similar character to those which have been shown to have been made for the benefit of the naval service, its officers and men. As in the case of the seaman and stoker, the Marine is in a transition stage, the old system is passing away and the new order of things has not yet arrived. As someone has said, we are witnessing "the evolution of the valuable Marine of to-day into the still more valuable Marine of the future."

Evidently the Admiralty is doing somewhat to grease the wheels of progress. By an Order in Council in 1902, the Deputy Adjutant-General of Marines received an increase in his half and retired pay, Then, in accordance with the new scheme, the services of the Marine officers were utilised for employment in gunnery and torpedo duties. and harbour routine, such as the officer of the guard, &c., and were generally given opportunities for taking a more active part in the duties of the ships to which they were attached. At the same time, Marine officers were made eligible for consideration for employment in the naval ordnance and naval ordnance store departments of the Admiralty, and as members of the Ordnance Committee. The result of these orders has been most satisfactory, and the Marine officers have demonstrated that their experience and training qualify them for many duties on board ship, and in connection with the work of the Navy in a manner advantageous to themselves and the Service. With additional work came additional emolument, and an improved scale of pay for Marine officers was established in March, 1903. In September, 1904, the instruction and training of the officers and men of the Corps in military duties when embarked was systematised, and an arrangement made whereby the senior Marine officer was given special responsibility in regard to drawing up schemes of exercise, including that of practising a landing in the face of a hostile force, &c., an arrangement which has worked most satisfactorily. At the same time facilities for study and preparation for promotion examinations by officers of the Corps were improved, and examinations in certain subjects are now conducted afloat, most advantageously. Promotion to the brevet rank of Colonel has also been accelerated.

Naval bands.

As regards the Corps generally, the following concessions have been noted. An outfit allowance of £100 has been granted to bandmasters of the Marines on promotion to commissioned rank. Allowanees have been established for men acting as instructors in Marine bands, and for the care of the band instruments. The new band scheme was promulgated in 1903, and revised regulations were issued in June, 1905, the central school of music being at Eastney, with branch schools at each of the Royal Marine divisions, and at the depôt at Deal. A scale of allowances, payable to the various officers, non-commissioned officers, and men on the staff, has been established; qualifications for musicians fixed with their pay and pension, &c., and opportunities for advancement. In all ships and establishments allowed bands the Admiralty now supply free of charge all the usual instruments, band-stands and other accessories for a brass and reed band, together with music in kind, of the value of from £8 to £15, according to the size of the band, and will bear the expense of repairs, &c., due to fair wear and tear. It has been estimated that the officers of the Navy will be saved £25,000 by the ships' bands being placed on this new footing, and the school of music established. The officers are benefited, the bands will be improved, and the Marine Corps reaps an advantage also. Then gunnery allowances for the Marines have been improved, and assimilated to those payable to petty officers and seamen. A new rating of Second Captain of Gun has been established. Each private of Marines receives an additional twopence per day after completing six months' training, efficiency pay and certain other allowances have been increased and augmented. Naturally, too, the Marines when embarked participate in all the improvements which have been made in regard to victualling, &c.

The pay of the Marine.

Conclusion.

We have completed the investigation which we set ourselves out to make, and the catalogue of legislative and administrative changes which we have compiled from a study of the "King's Regulations and Admiralty Instructions" bear out to a very large extent the anticipations expressed on the first page of this article. These volumes of the Laws of the Navy are an interesting and significant record of the advance in education and in character of the men of the Navy, the systems adopted for the improvement of their health and comfort, and the methods of training them to render effective service in their new environment. During the changeful and progressive period under review we find that the emoluments of the more scientifically-endowed officer have been increased, if not perhaps altogether in proportion to the new demands made upon him, yet a sufficiently notable advance. Then, too, we find the creation of many new and specially paid ratings, and opportunities given to the picked and higher educated men for adding to their pay by allowances with improving prospects. Side by side with the provision of suitable openings for advancement to the more intelligent men in every class we find improvements in uniform, improvements in victualling, improvements in cooking, and generally the ship rendered more habitable by various little concessions conformable to the altered times. The progress of science as applied by a determined progressive administration to the *matériel* has been accompanied by a corresponding advance in the pay and prospects of every branch of the *personnel*, and such a general amelioration of the conditions of sea life as the reforming character of the present Board of Admiralty would indicate to be a likely result of their policy.

CHAS. N. ROBINSON.

CHAPTER XI.

THE "BLUE WATER SCHOOL"—PRINCIPLES OF DEFENCE.

THE problems of defence that confront the British Empire are both vast in present significance and far-reaching in future importance for the safety or the jeopardy of all that we have won. Many important matters related thereto must receive consideration at the Colonial Conference. As the present secretary of the Imperial Defence Committee once said, irresistible forces are at work which may bring about a consolidation of the national strength, or tend towards national effacement. The old order has changed, and new conditions have arisen which call for practical recognition. "We can so organise this great empire that the unknown future may be faced with confidence and hope. If we neglect the task our brilliant history will, before long, close with the despairing epitaph:—

> ". . . . Occidit, occidit,
> Spes omnis et fortuna nostri
> Nominis . . . ."

Difficulties and complexities of the problem of defence.

Many master minds have been turned to the solution of our problems of defence, and yet some of these problems have resisted all the intellectual solvents that have been applied to them. Look where we may, we find even now no sound, permanent, or assured doctrine, no evidence of continuous policy to guide us in these vital matters. And even, strange as it may seem, the broad principles which stand firmly forth from all the rich and potent teaching of our past history are not always allowed to pass without question or cavil. When we turn to constructive statesmanship in these grave matters we discover no vital communion of thought between the Mother Country and the Colonies; and, at home, the very basis of defence is still the subject of argument in the warfare of contending schools. There seems to be no consistent or general understanding of the relations or proportion which should exist between the Navy and military services, or of the limitations, or perhaps of the duties, of each, and we are still discussing what we ought to do at a time when dark shadows are seen to be falling across the pathway ahead of us. It is not from want of earnestness that this state of affairs exists. Rather the extreme difficulty of creating an economical organisation for the defence of a world-wide empire, with an island Mother Country, and island daughters, and other daughter countries with long land frontiers, seems to present complexities that almost baffle the statesman. There are practical problems pressing for solution which seem to become as it were intangible in their elements when they are approached, or, at least, that cannot be stated in terms which all can regard as properly representing them. Therefore exceedingly difficult does it seem to some, if not impossible, to arrive at an agreement as to what should be done.

The "Blue Water" School—relations of the Naval and Military services.

The purpose in what follows is to attempt to appreciate the relation of the Navy to the sister service, and to insist upon certain true principles which, if they do not promise full agreement between rival disputants, should at least indicate the direction which discussion should pursue, and in which the basis of a common agreement may eventually be found. These principles should enable us, at least, to eliminate some of those erroneous ideas which have confused us in the past, and have led to a prodigious waste of national endeavour and of national resources. The points to which attention should be turned are those which may perhaps most readily be classed under the teachings ascribed to the "Blue Water School." But at the very outset we are confronted with the difficulty—or should we say the phenomenon?—that persons of weight and sagacity have no common conception of what the so-called Blue Water School is, or teaches, though its teaching is constantly appealed to. Some authorities have accepted its principles as sound and essential for our policy, while others who are entitled to be heard unreservedly condemn them as a snare for the State. Here, then, is surely a matter which merits inquiry. It may seem strange to many that the naval and military policy of this country should rest, or be supposed to rest, upon a certain formula or set of beliefs implied by the term, the "Blue Water School." But, if we look into recent discussions in Parliament and the Press, we shall find that the principles or doctrines, real or supposed, of this so-called school have commonly been assumed to lie at the root of the whole question of naval and military organisation.

A survey of naval literature would not warrant us in saying that the Navy itself has taken any great part in those controversies. The Navy is a silent service, and it was scarcely to be expected that naval officers would have much to say upon these questions. They, at least, know well what are the functions, purposes and duties of the Navy, and they do not hide from themselves its limitations. The blue water is the element of the Navy, and it knows that it must command the seas, not only to protect the British Islands from invasion, not only to be the guardian of the food supplies and the raw materials for manufactures, without which the life of the country could not be maintained, but as the vital bond between the Empire at large and the Empire's heart, and as the means without which the Mother Country could extend neither help nor support to her Colonies. These, it may be said, are naval common-places and do not call for discussion, being known and accepted generally by all classes of persons.

The Minister of War and Blue Water principles—the "bed-rock fact."

But, if the Navy has had little or nothing to say in this Blue Water controversy, some soldiers, statesmen and prominent leaders of thought have entered into the arena to defend or attack the principles attributed to this school. In the first place, let us deal with the things that have been said by those who have accepted and expounded Blue Water principles. The latest and best authorised of these is Mr. Haldane, Secretary of State for War, who, speaking in the House of Commons on the policy of the Army on March 8th, 1906, described Blue Water principles, in which he said he had taken great interest, as principles continuous in the policy of the country. Speaking of the doctrine or teaching of the Blue Water School, he said: "It is the principle of the late Government; it is the principle of the Defence Committee; it is the principle of the Navy; it is the principle of the War Office and the Army Council; it is the principle of the present Government, just as it was the principle of the late Government; it is an accepted principle, and one on which the rule of clear thinking should apply. We have bed-rock fact here for the organisation of our Home Defence." Particular note should be taken of this remarkable enunciation of the principles which have been adopted for Army organisation, based upon the duties and services of the Navy in the execution of these same Blue Water principles.

The Committee of Imperial Defence and the question of invasion.

Now it would appear that the Secretary of State for War was here to some extent, but certainly not entirely, basing himself upon what Mr. Balfour said in a speech in the House of Commons on May 11th, 1905, in which the then Prime Minister stated, as the result of the deliberations of the Committee of Defence, of which he was Chairman, "that a serious invasion of these islands is not a possibility which we need consider." Assuming, for the purpose of his argument, that the military defences of Great Britain had sunk to a condition in which it would be possible to attempt to conquer this country with 70,000 men, he said the Defence Committee had concluded, in view of the difficulty of transport, the length of time that would be occupied in disembarkation, supposing that the convoy were not intercepted by the fleet, and the opportunities open to destroyers and submarine boats, that the operation of invasion must fail if ever attempted.

Denunciation of Blue Water principles by Ministers and others.

Let us now turn to the statements of those who have attacked this "accepted principle," this "bed-rock fact." Blue Water principles, thus adopted as possessing a virtue of continuity, and as indicating the direction of national policy in the matter of defence, have since been submitted to very determined criticism from certain quarters. The Secretary of State for War himself explained that he did not take an "extreme" Blue Water view, and the Under Secretary of State for the Colonies, speaking in the House of Commons, said that "some of the extreme statements of the Blue Water School require to be swallowed with a good deal of salt." It is true that this gentleman unwarrantably ascribed to the Blue Water School the belief that "not a dinghy load of men could be landed in this country"—a statement which no credible or authoritative person would be likely to make. Another notable expression of opinion upon this subject was that of Lord Esher before the Aldershot Military Society on January 15th, 1907. He said that we were no longer an island State, and could not base our policy upon the old saying that this is a "sea-girt isle." "But men use it still, and indeed what in slang terms is called the 'Blue Water School' base their contention upon its descriptive accuracy. . . . If, then, this notion that we are no longer an island State is so obvious that it hardly requires defending or even stating, the theories of the extreme 'Blue Water School' have no sound historical basis. . . . For stripped of verbiage, the argument of the extreme 'Blue Water School' amounts to this, that Great Britain requires for defence the strongest possible Navy, and subject to that condition, her Army may be reduced to a police force for the Empire in time of peace. There never was a more fatal illusion." Lord Esher was careful to explain that he was not alluding to the school of thought at the head of which stood Sir John Fisher, a master of the arts of naval strategy and of Parliamentary tactics, but of the exaggerators, the men who, to serve some political end, tear a sound reason to tatters. It is to strip away exaggeration from the Blue Water School, and to show the soundness of its reasoning, that this chapter is written. Incidentally it may be remarked that Lord Esher went on to say that he knew of no recent writings which have indirectly "done more mischief in this country by strengthening our self-complacent attitude of mind" than the writings of Captain Mahan. As if this were not enough to condemn the Blue Water School in the minds of its critics, it may be noted that a lecture was delivered before the Third Cavalry Brigade at the Curragh on March 5th, 1907, in which Blue Water principles were characterised "as mere drivelling charlatanism without any historical basis." Moreover, in a paper read before the National

Defence Association in November, 1906, the Military Correspondent of the *Times* said that "the extravagant claims of Blue Water fanatics paralyse the effort of this country to obtain the Army of its policy to match the Navy of its need."

The anomaly, want of understanding, and consequent waste.

We are thus brought face to face with the singular anomaly that the Blue Water principles, which have been accepted by Cabinet Ministers as abiding principles for defence, have been described by persons whose views carry weight as fatal illusions, and even as drivelling charlatanism and dangerous fanaticism. The reason for this disparity of views lies no doubt in the different standpoint from which Blue Water principles are regarded, and still more from a different conception of what those principles are. The object of the writer is to attempt to elucidate this question a little, to strip from Blue Water doctrine some accretions which have become attached to it, and to demonstrate if possible that it does in fact, regarded properly, indicate to us a principle upon which our national and imperial defences may be established and maintained. The writer does not claim any authority to expound these views, except that he has long been a student of the great problems of defence, but he writes because it seems highly important to arrive at some understanding of the relations which exist, and should exist, between the naval and military forces of the Crown, and at some means of establishing a balance in the expenditure to be devoted to the maintenance of each.

It is here contended that the first point to be noted in an inquiry of this kind is that the principles of the defence of maritime empires should and do stand clear and unchangeable in history and practical philosophy. It is argued that Blue Water principles, properly understood, do enable us to reach the only source of true economy—economy both of effort and money—namely, a clear recognition of the objects to be attained, whereby all forces may be directed to a single and definite end and duplication of services and dissipation of effort may be precluded. It is eminently desirable that the naval and military services should be regarded together as constituting an instrument for the execution of the country's will; and, if we arrive at a right understanding of the purposes which that instrument is to serve, we shall be enabled to fashion and use it well. In other words, the means will be adapted to the end to be attained. When we think of the vast sums that have been expended upon fortifications which have never been and are never likely to be attacked, of the hopeless confusion which has been displayed in schemes of internal defence, and of the vast bodies of troops raised and maintained in places and conditions in which they could not be of service to the State, we realise how necessary it is to seek the invigorating atmosphere of clearness of thought, and that indeed, as one prescient writer has said, "it is necessary for all adherents of the Blue Water School of naval strategy to be up and doing in order to arrest the disastrously false direction which our military policy has been permitted to assume." Happily to some extent, since these words were written, sounder views have prevailed in quarters where practical application could be given to them.

Fundamental principles of naval defence.

The principles which we may claim for the Blue Water School are few and simple. They may be said to be all embodied in the thought that a supreme Fleet, capable of commanding the sea, making military effort at a distance from these islands possible, and keeping open the communications of the Empire, is as the breath of life to the United Kingdom and to the Empire itself. The possession of command of the sea means security and the loss of it annihilation. This is a profound truth that was realised by Elizabethan seamen and statesmen, who knew well that it was better to "entertain" foreign adversaries in their own homes before they had a chance of eating "of our Kentish capons." Possessing command of the sea, an island Power is in a dominating position, because its external activities can be extended and executed wherever they may be needed or desired, or wherever it may be necessary or desirable to employ them. Deprived of command of the sea, such a Power is at a grave disadvantage, more serious than that presented to any continental Power, because its adversaries can seize the initiative, which is the salt of success in war, can choose their own time and occasion for attack, and can deliver that attack wherever they may please, rendering it impossible for the defenders to concentrate or properly organise their forces, and thus constraining them to scatter their troops, dissipate their endeavours, and be weak where they should be strong. We are referring to the protection of these islands from invasion, and the conclusion is put forward that no effort can be too great to insure our naval predominance. Those who realise what would be the consequences of an invasion of England will realise that, however costly may be the means by which it is prevented, those means are cheap, while, if insufficient, they are incalculably dear. This is the first and greatest conclusion to which the principles of the Blue Water School direct us. In other words, if it be judged that a two-Power standard is sufficient, let that standard be completely maintained, and, if greater efforts should be required, let us not shrink from them.

The question of invasion.

The question of invasion cannot be debated here. All that will be urged is that, if we concentrate attention upon the possibility of invasion, we shall vitiate and misdirect our naval and military policy, as it has been misdirected by nearly every British Minister from the time of Pitt almost to the present day. The long lesson of history cannot be forgotten. The enormous difficulty of secret preparations, of the mustering of armies, the arraying of transports, and the launching of a vast force unexpectedly across the sea in these days of wireless telegraphy, high-speed warships, submarines and mines, cannot be ignored. For nine hundred years we have been immune from invasion, and for the greater part of that period we have been constantly engaged in invading other countries. If we should be led to regard plans made even by the greatest soldiers for oversea operations, to be undertaken in the presence of superior naval forces, as confirming principles contrary to the unbroken teaching of our history, we shall divert money to the creation of fixed defences which should be devoted to the Fleet. And if we should go far in that direction we shall do much to make possible the very operation of invasion which the Fleet should render impossible.

It is, of course, conceivable that a foreign Power, victorious at sea, might not choose to attempt an invasion, and might attempt to reduce us by menacing our food supplies and raw materials, by throwing us into financial panic, and by so affecting prices that surrender might become inevitable. It has been asked what would be the value of half a million of men armed and ready to grapple with the enemy if famine and revolution stalked through the land and the enemy never came. "There is no arguing," as one trenchant writer has said, "with an empty belly." Indeed, our very existence as an independent nation is obviously bound up with the maintenance of our sea power. This bare possibility, that an attempt might be made to starve us into surrender, is not a probability. To invade England and dictate peace at the capital is an achievement too tempting not to inspire foreign general staffs to attempt to attain it, and therefore we may certainly conclude that if ever we lose command of the sea invasion will inevitably follow.

The naval defence of the Empire.

But there is a larger aspect of the problem which leads us to the same conclusion, namely, of the unsurpassed importance of a supreme Navy. The great teaching of the past shows forth the plain and unassailable principles of imperial defence. Our transmarine possessions, so far as our means of assisting them are concerned, are the ripe fruit which will fall into the lap of the ultimate naval Power. If it had not been for the Navy, South Africa would certainly have been lost to the British Empire, and no colony or dependency which cannot defend itself could hope to maintain its independence if its naval bond with the Mother Country were severed. It was by sea power—by sea power often as the shaft of that lance of which the military forces are the head—that our possessions were won and have been maintained. The transmarine communications of the Empire in peace and war must be maintained at all costs, and it is the work of the Navy to safeguard them. During the Turko-Egyptian Frontier dispute the Navy "undertook to defend the Suez Canal against any possible attack." It undertook to defend it against all naval attack, and that is the function which the Navy will ever have to execute, both in regard to the Suez Canal and to all other lines of sea communication in the British Empire. Thus no doubt can remain that a great Navy, equal to all the demands to be made upon it, is the first essential for the maintenance and defence of the British Empire as it is of the Empire's heart.

The limitations of sea power.

In what precedes an attempt has been made to express Blue-Water teaching as it affects the importance and the essentials of naval predominance. But do the doctrines of this school imply that an Army is not required; that, to use Lord Esher's interpretation of these doctrines, if we possess the Navy of our need, the Army may be reduced "to a police force for the Empire in time of peace?" No reasonable person can entertain such a view. It cannot properly be deduced from anything that has been said in support of Blue Water teaching. Rather may it be said that the principles of the school to which the Secretary of State for War has attached such importance—he has himself spoken of the Regular Army as a "police force"—indicate the purpose for which the Army should be organised and prepared as a mobile and active force. For sea power has its inevitable and obvious limitations. It may sometimes be absolute and unquestioned, as it was in 1854, when we landed an army in the Crimea; and in 1899, when we disembarked our troops in South Africa. But it cannot always, nor perhaps generally, possess that character. Even when the French Fleet had been destroyed at Trafalgar, and we were maintaining an army in the Peninsula, which, without sea power could not have been landed there, Lord Melville wrote to Wellington that we could not be "responsible for ships sailing singly or without convoy between this country and Spain and Portugal, or for any considerable distance along the coasts of those countries." Nor will it be contended by any Blue Water advocate that the Navy can suffice alone. Its very limitations themselves imply the existence of an army equipped and ready to seize the advantages it has won in order to achieve the victory. Sea power made possible the capture of Sebastopol and Port Arthur, but it was not the means by which those places were reduced. The real function of the Fleet in both those cases was to close them from the sea, and to enable the military forces to operate for their reduction and deprive the enemy of things essential for his success. One great duty of the Fleet was to render possible the transport of the troops, and to maintain them in the field by keeping open their sea communications, while making impossible any naval movements on the part of the adversary.

The "fleet in being"—meaningless expression.

It may be suitable in this place to devote a little attention to the famous "fleet in being," based upon the strategy of Torrington in the presence of a superior French Fleet under Tourville. As will be remembered, he retired, saying, "Had I fought otherwise our Fleet had been totally lost and the Kingdom laid open to invasion. As it was, most men were in fear that the French would invade, but I was always of another opinion, for I always said that whilst we had a Fleet in being they would not dare to make an attempt." It has been said that the theory of the "fleet in being" is a part of the doctrine of the Blue Water School, but if by such a fleet is implied a fleet retained in existence, but unable to interfere with the proceedings of the enemy, I hope no Blue Water man will regard the theory based upon it as part of the doctrines which he should hold. It is at least certain that practical statesmen and administrators who have accepted Blue Water principles have never placed their trust in a "fleet in being" as a bar to invasion, or as likely to possess much value in any other circumstances, for a fleet to be of value must be one that can strike, and be so organised and equipped that it will be capable of bringing an enemy to action and of defeating him. It is possible that Tourville was prevented from invading by the existence of Torrington's fleet, but the Japanese were not deterred from landing in Manchuria by the presence of the Russian ships at Port Arthur, nor would any general or admiral be deterred in like circumstances from undertaking over-sea operations if he could mask or contain the naval forces of the enemy.

Military power necessary for complete naval success. The attack of naval bases.

But, returning to the larger question, it is obviously impossible for a land campaign to be undertaken and conducted over-sea unless initiated and maintained by the support of a predominant Navy. Without such support we should have been powerless in our struggle with our American colonies, and, deprived of such support, we could neither have landed in the Crimea nor in South Africa, nor could we have entered upon enterprises or operations in those countries. But all this only shows that the Navy is but one part of the fighting organization which is created with the object of enforcing the nation's will. We may go further, and say that for the final purpose of securing absolute command of the sea, by the destruction of the enemy's fleet, and the crushing of all his means for exerting force at sea, the co-operation of military forces may be, and probably will be, essential. Such a complete destruction of the enemy's naval resources may often be impossible without the capture of his arsenals, dockyards, naval bases and coaling-stations, which in most cases can only be captured by the landing of troops to besiege them from the landward side. The Fleet will cut the sea communications of the place, and the landward defences cannot stand against the troops. This has been proved over and over again, and will be admitted as a part of true Blue Water teaching. Let it be recognised that for achieving victory in the operations of war we must be prepared to set on foot operations which will deprive the adversary of those things which are essential to him, and in the case of the British Empire those essentials are undoubtedly the resources of his naval bases. From the time of the Punic wars downwards, the capture of the ports, harbours, and shipbuilding yards of the enemy has been a chief feature in all wars in which naval Powers have been engaged. Warships are designed, perhaps to blockade, and certainly to observe the naval ports of the enemy and to bring his fleets to action, but undoubtedly not to attack his fortifications.

The necessary co-operation of naval and military forces.

We therefore see that there is an essential relation between naval and military forces in many of the operations of warfare. And we may further conclude that a fleet which has behind it the striking power of an army to enforce its successes is a far more powerful engine of war than a fleet not so supported. If we conceive the Fleet and an active army working in co-operation, we may see that the threat of a disembarkation hanging over an enemy will tend to paralyse his military organisation, and make it impossible for him to prepare to resist in strength an attempt at landing when he cannot know where that landing will be made. In this way the combined Fleet and Army have the power of breaking up the enemy's combinations, and of forbidding to him that power of concentration, which is essential for success. The factors of mobility, initiative, and surprise reside in such a combined naval and military force. From the conditions thus sketched—and they might have been enforced from all the teachings of history—the conclusion may be drawn that the Blue Water doctrine cannot exclude the necessity of providing an army to unite with the Fleet in its operations, and to achieve and enforce its victories.

But they do certainly exclude the maintenance of vast bodies of troops chained by the law of their being, the terms of their engagement, and the character of their training to these islands, unless they are to be made the rapidly available reserve of a mobile army of sufficient strength, equipped and ready for active service abroad.

Blue Water doctrines exclude also a misdirection of our policy in the direction of stationary and local defences. We shall not fall into the error which led to the squandering of vast sums on the local defences of the ports, justified and recommended, strange as it may seem, by the Royal Commission of 1859–60 on the ground that the country could never stand the expense of maintaining a fleet sufficiently powerful to protect them. It was assumed that their communications might be broken without serious consequences if the places themselves were made secure—extraordinary inversion of naval and military strategy, and vain hope, for the history of all wars shows that no strong place is impregnable. Those are dead and gone ideas, but still we have seen forts raised on the Surrey Hills which could serve no purpose whatever, and other like evidences of extravagant folly.

It is altogether outside the scope of this chapter to attempt to indicate what should be the strength of the army required, how it should be organised, or how it should be prepared either for the attack of naval bases or for the operations of war on a great scale. Probably a large view of our Imperial responsibilities would suggest that the military system of the Empire should not be based upon the association of the Regular, Territorial and Indian Armies only, but should include the military organisations of the Colonies. Neither is it proposed to show what should be the resources of such an army at home, nor what should be the organisation of its reserves; but the suggestion may be offered that if it is prepared for war on a great scale, it must always have a great trained reserve in this country. In this connection, it should not pass the wit of our military organisers to prepare to resist those raids which a determined enemy may make upon our coasts—raids necessarily upon a small scale, if our Navy be maintained at the high level of strength and efficiency which is requisite—and such raids are known to be possible to the strongest advocates of the Blue Water School. Nor, again, is there any purpose here of dealing with the broad principles of naval organisation in which the Colonies should have their share. But it may be permitted to quote what Lord Selborne said, as First Lord of the Admiralty, when he addressed the Colonial Conference in 1902. "I want them (the Colonial Governments) to regard the Navy as their own, at least as much as ours, and with that object I wish to see in the Navy more Colonial officers and a contribution of Colonial seamen. I want, in fact, if I may use such a term, to increase the maritime spirit of the Empire. After all, we are not in this country all sailors, yet we are all imbued with the maritime spirit. Here you have the great colonies covering vast geographical tracts of country. Is there not a danger that in the far interior, unless we take precautions, the maritime spirit may be lost?"

Conclusions.

It would have been possible to deduce from ancient and modern warfare many instances of the manner in which sea and land forces have won advantages from their co-operation—how, as in the Peninsular War, the Navy enabled the Army to shift its sea base from one place to another; how navies have gained, as in the operations against Port Arthur by the operations of land forces; and how each of them has accomplished more through the presence and co-operation of the other. What then is the conclusion of this attempt to analyse the principles of the Blue Water School, so far as they may reasonably be conceived, with the object of throwing some light upon the direction of thought which should be pursued in matters of national and Imperial defence? It is that there is needed a sounder co-ordination of the duties of the naval and military services than we have seen in the past, or than is yet visible in the future, and an end to that attitude of mind which has caused soldiers to act as if the Navy did not exist, with all its wasteful consequences. In a great Empire like ours we are inevitably bound to look abroad and to recognise as the true scene of our military endeavours those countries in which our adversaries may best be assailed. Our only true policy is with a mobile army to be able to carry the war into the enemy's country. We have land frontiers which cannot be defended without military forces, but those forces cannot be brought to bear without the agency and support of the Navy. The thought is suggested accordingly, that the real business of the Army must inevitably be to fight abroad and not at home, and this is presumably where our military organisers have sought to apply the teachings of the Blue Water School, and why these teachings have been described as giving an accepted principle to which the rule of clear thinking may apply, and as indicating the bed-rock fact for the organisation of our Home defence. They indicate more, for they show how the Empire must be defended by the Fleet and the Army together.

A plea for an understanding between the naval and military forces.

A final remark may be permitted. There is a fundamental necessity, consequent on the conditions described, for a right understanding between the naval and military forces, which shall indicate how they may co-operate to achieve success. History does not tell us that co-operation has always been as well organised or as complete as it should have been. There have been some great soldiers, like Marlborough, who have understood well the character and incidence of naval power. But not many have said, as he did, that all orders that can be given in England "must be entirely subservient to the judgment of the Fleet"; or, perhaps, who would agree with him that "the sea service is not so easily managed as that of the land . . . and you and I are not capable of judging them." There are too many cases recorded like that of the intended attack upon Cadiz in 1702, when Rooke was in command of the fleet and the Duke of Ormonde of the land forces. As Colonel Stanhope wrote, "We are not only divided, sea against land, but land against land, and sea against sea. Now if it be true that a house divided cannot stand, I am afraid that it is still more true that an army and fleet each divided against itself, and each against the other, can make no conquests." The truth of this remark was demonstrated in the cases of Vernon and Wentworth at Cartagena, and we cannot forget the differences between Hood and Dundas at Toulon, which left that place in the hands of the French, with its resources little impaired. It might have been supposed that such differences of opinion and judgment belonged to the past, if we did not know the unfortunate relations which existed between the naval and military commanders in the operations before and around Santiago de Cuba in 1898. Therefore, as an epilogue to these remarks upon Blue Water doctrines and the principles of Imperial defence, an earnest plea may be entered for a complete understanding between the naval and military authorities, so that, when we are embroiled in war, there may be perfect co-operation between the respective branches of the forces, each understanding and realising the powers and limitations of the other.

JOHN LEYLAND.

PART II.

LIST OF BRITISH AND FOREIGN SHIPS.
ORDNANCE TABLES.

PART II.

LIST OF BRITISH AND FOREIGN SHIPS.

THE following abbreviations are used throughout the Alphabetical List:—

a.c.	Armoured cruiser.
a.g.b.	Armoured gunboat.
b.	Barbette ship.
c.b.	Central-battery ship.
c.d.s.	Coast-defence ship.
comp. (in armour column).	Compound or steel-faced armour.
corv.	Corvette.
cr.	Cruiser.
d.v.	Despatch vessel.
g.b.	Gunboat.
g.v.	Gun-vessel.
H.S.	Harveyised or similar hard-faced steel.
K.S.	Krupp steel.
shd.	Sheathed.
p.	Protected.
t.	Turret-ship (in class column).
t.	Trial speed and I.H.P. at trials (in speed and I.H.P. columns).
to.cr.	Torpedo-cruiser.
to.g.b.	Torpedo-gunboat.
to.r.	Torpedo-ram.

l.	Light guns under 15 cwt., including boats' guns.
M.	Machine guns.
f. tu. or b. tu.	Fixed or bow tube for discharging fish torpedoes.
sub.	Submerged tube for do.
A.	Armstrong guns.
K.	Krupp guns.

W.T.	Water-tube boilers, where the type is not known or not yet decided.
B.	Belleville.
Bl.	Blechynden.
B. & W.	Babcock and Wilcox.
D'A.	D'Allest.
D.	Dürr.
E.	Earle.
Ex.	Express.
Du T.	Du Temple.
L.	Laird.
L.N.	Laird-Normand.
M.	Mumford.
My.	Myabara.
Nic.	Niclausse.
Nor.	Normand.
N.S.	Normand-Sigaudy.
R.	Reed.
T.	Thornycroft.
T.S.	Thornycroft-Schulz.
W.F.	White-Forster.
Y^1.	Yarrow small tube.
Y^2.	Yarrow large tube.
V.E.	Vickers Express.
cyl.	Cylindrical.

GREAT BRITAIN.—Armoured Ships.

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Aboukir** shd.	12,000	440	69½	26¼	21,375 B.	Fairfield	Fairfield .	1900	1902	751,118	6–2 K.S.	3–1½	..	5 H.N.	6 K.S.	5	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	21·6 *t*	800 1600	755
a.c.	**Achilles** .	. 13,550	480	73½	27	23,275 Y² & cyl.	Elswick .	Hawthorn	1905	1907	1,187,166*	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 4 *7·5-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	23·27 *t*	1000	704
b. 1st cl.	**Africa** .	. 16,350	425	78	26¾	18,698 B. & W. & cyl.	Chatham	J. Brown .	1905	1906	1,461,429*	9 H.S.	2–1	8–7	12 H.S.	12–6 H.S.	7 K.S.	4 *12-in.*, 4 *9·2-in.*, 10 6-in., 26 small.	4	18·95 *t*	950 2150	776
b. 1st cl.	**Agamemnon**	. 16,500	410	79½	27	16,750 Y²	Govan .	Hawthorn Leslie	1906	..	1,605,065*	12–6	..	8	8	12	..	4 *12-in.*, 10 *9·2-in.*, 15 *12-pr.*, 24 *3-pr.*, & M.	5	18	900 2500	865
b. 1st cl.	**Albemarle**	. 14,000	405	75½	26½	18,296 B.	Chatham	Thames Ironworks	1901	1903	1,009,835	7–3 K.S.	2–1	..	7 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·6 *t*	900 2000	750
b. 1st cl.	**Albion** .	. 12,950	390	74	26	13,500 B.	Blackwall	Maudslay .	1898	1902	858,745	6–2 H.N.	3–1	..	12–8 H.N.	12–6 H.N.	5 H.N.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·25 *t*	1000 2300	700
b. 2nd c.	**Anson** .	. 10,600	330	68½	27¼	11,500	Pembroke	Humphrys	1886	1889	769,923	18–8 *comp.*	3–2½	..	16–6 *comp.*	14–12 *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 12 *6-pr.*, 10 *3-pr.*, 7 M., 2 l.	2	16·75 *t*	900 1200	515
a.c.	**Antrim** .	10,850	450	68½	25	21,604 Y.& cyl.	Clydeb'nk	J. Brown & Co.	1903	1905	873,625	6–2 H.N.	2–¾	..	4½ H.N.	6 H.N.	6 H.N.	4 *7·5-in.*, 6 *6-in.*, 2 *12-pr.*, 22 *3-pr.*, 2 M.	2	23·02 *t*	800 1950	655
a.c.	**Argyll** .					21,190 B. & W. & cyl.	Greenock	Greenock Foundry	1904	1906	873,598									22·38 *t*		
a.c.	**Bacchante** shd.	12,000	440	69½	26¼	21,520 B.	Clydeb'nk	J. Brown	1901	1902	787,230	6–2 K.S.	3–1½	..	5 H.N.	6 K.S.	5	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	21·75 *t*	800 1600	755
b. 1st c.	**Barfleur** . shd.	10,500	360	70	25½	13,163	Chatham	Greenock Foundry	1892	1894	582,605	12 *comp.*	2½–2	4 N.S.	8 *comp.*	9 *comp.*	4–2 N.S.	4 *10-in.*, 10 *6-in.*, 2 *9-pr.*, 8 *6-pr.*, 9 *3-pr.*, 7 M.	3	18·50	750 1240	625

a.c.	**Bedford** . .	9800	440	66	24½	22,457 B.	Fairfield .	Fairfield .	1901	1903	706,020	4–2 K.S.	2–¾	..	3 K.S.	4 K.S.	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 2 M., 2 l.	2	22·7 *t*	740 1760	687
b. 2nd c.	**Benbow** . .	10,600	330	68½	27¼	11,500	Blackwall	Maudslay	1885	1888	774,791	18–8 *comp.*	3–2½	..	18–6 *comp.*	14–12 *comp.*	..	2 *16·25-in.*, 10 *6-in.*, 12 *6-pr.*, 10 *3-pr.*, 7 M., 2 l.	2	16·75 *t*	900 1200	510
b. 1st cl.	**Bellerophon** .	18,600	490	82	27	23,000	Portsm'th	Fairfield .	Bldg.	..	..	..	..	..	..	..	..	..	..	21	900	..
a.c.	**Berwick** . .	9800	440	66	24½	22,000 Nic.	W. Beardmore & Co.	Humphrys	1902	1903	750,984	4–2 H.S.	2¾	..	5 N.S.	5–4 N.S.	4 N.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.G.	2	23·0	800 1600	655
a.c.	**Black Prince** .	13,550	480	73½	27	23,939 B. & W. & cyl.	Blackwall	Thames Ironworks	1904	1906	1,133,514	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	23·65 *t*	1000 2000	704
b. 1st cl.	**Britannia** . .	16,350	425	78	26¾	18,725 B & W & cyl	Portsm'th	Humphrys	1904	1906	1,450,757*	9 H.S.	2–1	8–7	12 H.S.	12–6 H.S.	7 K.S.	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12-pr.*, 16 *3-pr.*, M.	4	18·72 *t*	950 2150	776
b. 1st cl.	**Bulwark** . .	15,000	400	75	26¾	15,000 B.	Devonp't	Hawthorn	1899	1902	997,846	9 H.S.	3–2	3 K.S.	12 H.S.	12–5 H.S.	6–2 K.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 8 *3-pr.*, & M.	4	18·0	900 2000	750
b. 1st cl.	**Cæsar** . .	14,900	390	75	27½	12,000	Portsm'th	Maudslay .	1896	1897	885,212	9 H.S.	4–2½	..	14–9 H.S.	14–6 H.S.	6 H.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5	17·5	900 2000	757
b. 2nd c.	**Camperdown** .	10,600	330	68½	27¼	11,500	Portsm'th	Maudslay .	1885	1889	769,993	18 *comp.*	3–2½	..	16 *comp.*	12 *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 12 *6-pr.*, 10 *3-pr.*, 7 M., 2 l.	2	16·9 *t*	900 1200	515
b. 1st cl.	**Canopus** .	12,950	390	74	26	13,500 B.	Portsm'th	Greenock Foundry	1897	1900	866,516	6 H.S.	3–1	2 N.S.	12 H.S.	12–5 H.S.	5 H.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·25	800 1850	700
a.c.	**Carnarvon** .	10,850	450	68½	25	21,489 Nic.&cyl.	Beardm're	Humphrys	1903	1905	858,130	6–2 K.S.	2–¾	..	4½ K.S.	6 N.S.	6	4 *7·5-in.*, 6 *6-in.*, 2 *12-pr.*, 22 *3-pr.*, 2 M.	2	23·3 *t*	800	655
b. 1st cl.	**Centurion** shd.	10,500	360	70	25½	13,214	Portsm'th	Greenock Foundry	1892	1893	593,050	12 *comp.*	2½–2	4 N.S.	12 *comp.*	9 *comp.*	6–2 K.S.	4 *10-in.*, 10 *6-in.*, 8 *6-pr.*, 12 *3-pr.*, 7 M., 2 l.	3	18·25	750 1125	625
a.c.	**Cochrane** .	13,550	480	73½	27	23,654 Y² & cyl.	Fairfield .	Fairfield .	1905	1906	1,197,174*	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 4 *7·5-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	23·29 *t*	1000	704
b. 2nd c.	**Colossus** . .	9420	325	68	26¼	5500	Portsm'th	Maudslay .	1882	1886	781,537	18–14 *comp.*	3–2½	..	16–13 *comp.*	16 *comp.*	2	4 *12-in.*, 5 *6-in.*, 4 *6-pr.*, 10 *3-pr.*, 6 M., 4 l.	2	14·2 *t*	970	388
b. 1st cl.	**Commonwealth**	16,350	425	78	26¾	18,538 B & W & cyl	Fairfield .	Fairfield .	1903	1905	1,392,411	9 H.S.	2–1	8–7	12 H.S.	12–6 H.S.	7 K.S.	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12-pr.*, 16 *3-pr.*, M.	4	19·01 *t*	950 2150	776

* Total estimated cost of ship including guns.

GREAT BRITAIN.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost	Armour.						Armament.		Speed.	Coal.	Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
																Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.						£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Cornwall** .	9800	440	66	24½	22,000 B. & W.	Pembroke	Hawthorn	1902	1905	756,274	4–2 H.S.	2–¾	..	5 N.S.	5–4 N.S.	4 N.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.	2	23·6 *t*	800 1600	655
b. 1st cl.	**Cornwallis**	14,000	405	75½	26½	18,238 B.	Blackwall	Thames S. Co.	1901	1904	1,030,302	7 K.S.	2–1	1½	14 K.S.	11–6 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·9 *t*	900 2000	750
a.c.	**Cressy** . shd.	12,000	440	69½	26¼	21,240 B.	Fairfield .	Fairfield .	1899	1901	749,324	6 K.S.	3–2	..	5 K.S.	6 K.S.	5 K.S.	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	20·79	800 1600	755
a.c.	**Cumberland** .	9800	440	66	24½	22,000 B.	Glasgow	London & Glasgow Co.	1902	1904	718,168	4–2 K.S.	2–¾	..	5	5–4	4 N.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.	2	23·0	800 1000	655
a.c.	**Defence** .	14,600	490	74½	26	27,000 Y²	Pembroke	Scotts S. & E. Co.	1907	..	1,362,970	6–4	1–½	3	..	8	7	4 *9·2-in.*, 10 *7·5-in.*, 2 *12-pr.*, 30 *3-pr.*, M.	5	23	1000	755
b. 2nd.l.	**Devastation** .	9,330	285	62¼	27½	7000	Portsm'th	Maudslay	1871	1873	383,950	12–10	3–2	..	12–10	14	..	4 *10-in.*, 6 *6-pr.*, 8 *3-pr.*, 5 M., 2 l.	2	14·0	1800	410
a.c.	**Devonshire** .	10,850	450	68½	25	21,000 Nic. & cyl.	Chatham	Thames Ironworks	1904	1905	850,877*	6–2	2–¾	..	4½ K.S.	6 N.S.	6	4 *7·5-in.*, 6 *6-in.*, 2 *12-pr.*, 22 *3-pr.*, 2 M.	2	22·25	800 1600	655
b. 1st cl.	**Dominion** .	16,350	425	78	26¾	18,438 B. & W. & cyl.	Barrow .	Vickers .	1903	1905	1,365,790	9 K.S.	2–1	8–7 K.S.	12 K.S.	12–6 K.S.	6	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12-pr.*, 16 *3-pr.*, M.	4	19·5 *t*	950 2150	776
a.c.	**Donegal** .	9800	440	66	24½	22,000 B.	Fairfield .	Fairfield Co.	1902	1903	715,947	4–2 K.S.	2–¾	..	5 K.S.	5–4	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.	2	23·0	800 1600	655
a.c.	**Drake** .	14,100	500	71	26	31,450 B.	Pembroke	Humphrys	1901	1902	1,002,977	6 K.S.	3–2	..	5 K.S.	6–5 K.S.	5 K.S.	2 *9·2-in.*, 16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 M.	2	24·11 *t*	1250 2500	900
b. 1st cl.	**Dreadnought**	17,900	490	82	26½	24,712 B. & W.	Portsm'th	Vickers§ .	1906	1906	1,813,100*	11	2¾–1¾	..	..	11–8	..	10 *12*-in., 27 *12-pr.* Q.F.	5	21·25 *t*	900 2700	800
a.c.	**Duke of Edinburgh**	13,550	480	73½	27	23,685 B. & W. & cyl.	Pembroke	Hawthorn Leslie	1904	1906	1,201,687*	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	22·84 *t*	1000	704
b. 1st cl.	**Duncan** .	14,000	405	75⅓	26½	18,222 B.	Blackwall	Thames S. Co.	1901	1903	1,023,147	7 K.S.	2–1	1½ K.S.	14 K.S.	11–6 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·9 *t*	900 2000	750

b. 2nd cl.	**Edinburgh** .		9,420	325	68	26¼	5,500	Portsm'th	Humphrys	1882	1886	735,354	18–14 *comp.*	3-2½	..	16–13 *comp.*	16 *comp.*	..	4 *12-in.*, 5 *6-in.*, 4 *6-pr.*, 10 *3-pr.*, 6 M., 2 l.	2	14·2	970	388
b. 1st cl.	**Empress of India**		14,150	380	75	27½	13,000	Pembroke	Humphrys	1891	1893	846,321	18–5 *comp.*	3	5	16 *comp.*	17–6 *comp.*	6–2 K.N.C.	4 *13·5-in.*, 10 *6-in.*, 16 *6-pr.*, 12 *3-pr.*, 2 M., 2 l.	3	18·0 *t*	900 1450	740
a.c.	**Essex** .		9,800	440	66	24½	22,000 B.	Pembroke	John Brown	1901	1903	736,557	4-2 K.S.	2-¾	..	5	5	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	23·0	800 1600	655
a.c.	**Euryalus** .	shd.	12,000	440	69½	26¼	21,318 B.	Barrow .	Vickers .	1901	1904	782,901	6 K.S.	3-2	2	5 K.S.	6 K.S.	5 K.S.	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M.	2	21·63 *t*	800 1600	755
b. 1st cl.	**Exmouth** .		14,000	405	75½	26½	18,346 B.	Laird .	Laird .	1901	1903	1,032,409	7 K.S.	2-1	1½ K.S.	14 K.S.	11–6 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	19·0	900 2000	750
b. 1st cl.	**Formidable** .		15,000	400	75	26¾	15,000 B.	Portsm'th	Earle .	1898	1901	1,022,745	9 H.S.	3-2	2	12 H.S.	12–5	8 K.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 8 *3-pr.*, & M.	4	18·0	900 2000	750
b. 1st cl.	**Glory** .		12,950	390	74	26	13,500 B.	Laird .	Laird .	1899	1901	841,014	6 H.S.	3-2	2 N.S.	12 H.S.	12–5 H.S.	5 H.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·25	800 1850	700
b. 1st cl.	**Goliath** .		12,950	390	74	26	13,500 B.	Chatham .	Penn .	1898	1900	866,006											
a.c.	**Good Hope** .		14,100	500	71	26	31,071 B.	Fairfield .	Fairfield .	1901	1902	990,759	6 K.S.	3-2	..	5 K.S.	6–5 K.S.	5 K.S.	2 *9·2-in.*, 16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 M.	2	23·5 *t*	1250 2500	900
a.c.	**Hampshire** .		10,850	450	68½	25	21,508 Y. & cyl.	Elswick .	Hawthorn.	1903	1905	833,817	6–2 K.S.	2-¾	..	5 K.S.	5–4 N.S.	..	4 *7·5-in.*, 6 *6-in.*, 2 *12-pr.*, 22 *3-pr.*, 2 M.	2	23·47 *t*	800 1600	655
b. 1st cl.	**Hannibal** .		14,900	390	75	27½	12,000	Pembroke	Harland .	1896	1897	906,799	9 H.S.	4-2½	..	14–9 H.S.	14–6 H.S.	6 H.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5	17·5	900 2200	757
b. 1st cl.	**Hibernia** .		16,350	425	78	26¾	18,000 B.&W. & cyl.	Devonp'rt	Harland & Wolff	1905	1906	1,444,828*	9 H.S.	2-1	8	12 H.S.	12–6 H.S.	7 K.S.	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12 pr.*, 16 *3-pr.*, & M.	4	18·9†	950 2150	776
b. 1st cl.	**Hindustan**						18,521 B.&W. & cyl.	Clydeb'nk	J. Brown & Co.	1903	1905	1,454,526	9 K.S.	2-1	8	12 K.S.	12 N.S.	6 N.S.			19·01 *t*		
a.c.	**Hogue** .	shd.	12,000	440	69½	26¼	21,432 B.	Barrow .	Vickers .	1900	1902	749,809	6 K.S.	3	2 H.S.	5 K.S.	6 K.S.	5 K.S.	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	22·6 *t*	800 1600	755
t. 1st cl.	**Hood** .		14,150	380	75	27½	13,000	Chatham	Humphrys	1891	1893	849,252	18 *comp.*	3	5 *comp.*	17 *comp.*	18–6 *comp.*	6–2	4 *13·5-in.*, 10 *6-in.*, 10 *6-pr.*, 12 *3-pr.*, 2 M., 2 l.	3	17·5	900 1800	730

---

* Including armament.

† On trials 18·1.

§ Turbine machinery of Parsons type.

GREAT BRITAIN.—Armoured Ships—*continued.*

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
																Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.						£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b. 2nd cl.	**Howe**	10,300	325	68	27¼	11,500	Pembroke	Humphrys	1885	1889	705,412	18 *comp.*	3–2½	..	16 *comp.*	11½ *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 12 *6-pr.*, 10 *3-pr.*, 7 M., 2 l.	2	16·8	900 1200	515
b. 1st cl.	**Illustrious**	14,900	390	75	27½	12,000	Chatham	Penn	1896	1898	894,585	9 H.S.	4–2½	..	14–9 H.S.	14–6 H.S.	6 H.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5	17·5	900 2200	757
b. 1st cl.	**Implacable**	15,000	400	75	26¾	15,000 B.	D'port	Laird	1899	1902	989,116	9 K.S.	3–2	2	12 K.S.	12–5 K.S.	6	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 8 *3-pr.*, & M.	4	18·0	900 2000	755
b. 1st cl.	**Irresistible**						Chatham	Maudslay	1898	1901	1,048,136											
a.c.	**Invincible**	17,250	530	78½	26	41,000	Elswick	Humphrys	Bldg.	..	1,744,055*	6	..	1	..	..	..	8 *12-in.*	..	25	1000	..
a.c.	**Inflexible**						Clydeb'k	J. Brown	Bldg.		1,711,910*											
a.c.	**Indomitable**						Fairfield	Fairfield	1907		1,731,377*											
b. 1st cl.	**Jupiter**	14,900	390	75	27½	12,000	Clydeb'nk	Thomson	1895	1897	902,011	9 H.S.	4–2½	..	14–9 H.S.	14–6 H.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5	17·5	900 2200	757
a.c.	**Kent**	9800	440	66	24½	21,000 B.	Portsm'th	Hawthorn	1900	1903	700,283	4–2 K.S.	2–¾	..	5 K.S.	5–4 N.S.	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	24 *t*	800 1600	500
b. 1st cl.	**King Edward VII.**	16,350	425	78	26¾	18,138 B. & W. & cyl.	Devonp'rt	Harland	1903	1905	1,473,245*	9 K.S.	2–1	8–7 K.S.	12 K.S.	12–6 N.S.	6	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12-pr.*, 16 *3-pr.*, M.	4	19·04 *t*	950 1200	776
a.c.	**King Alfred**	14,100	500	71	26	30,893	Barrow	Vickers	1901	1903	978,125	6-5-4 K.S.	2½–1	..	5 K.S.	6–5 K.S.	5 K.S.	2 *9·2-in.*, 16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 l.	2	23·46	1250 2500	813
	Leviathan					31,203 B.	Clydeb'nk	J. Brown			1,012,959									23·28 *t*		
a.c.	**Lancaster**	9800	440	66	24½	22,000 B.	Elswick	Hawthorn	1902	1904	732,858	4–2 K.S.	2–¾		5 K.S.	5–4 N.S.	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.	2	23·0	800 1600	500

b. 1st cl.	**London**	15,000	400	75	26½	15,000 B.	Portsm'th	Earle	1899	1902	1,036,393	9 K.S.	3–2	2	12 K.S.	12–5 K.S.	6	4 *12-in.*, 12 *6-in.*, 16 *12-pr.*, 8 *3-pr.*, & M.	4	18·0	900 2000	755
b. 1st cl.	**Lord Nelson**	16,500	410	79½	27	16,750 B. & W.	Jarrow	Palmer	1906	..	1,608,882*	12		8	..	12	..	4 *12-in.*, 10 *9·2-in.*, 15 *12-pr.*, 24 *3-pr.*, M.	5	18	900	865
b 1st cl.	**Magnificent**	14,900	390	75	27½	12,000	Chatham	Penn	1894	1895	908,789											
b. 1st cl.	**Majestic**	14,900	390	75	27½	12,000	Portsm'th	Barrow	1895	1895	916,382	9 H.S.	4–2½	..	14–9 H.S.	14–6 H.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5	17·5	900 2200	757
b 1st cl.	**Mars**	14,900	390	75	27½	12,000	Birkenh'd	Laird	1896	1897	902,402											
a.c.	**Minotaur**	14,600	490	74½	26	27,000 Y²	Devonp'rt	Harland & Wolff	1906	..	1,410,356*	6–4	1–½	3	..	8	7	4 *9·2-in.*, 10 *7·5-in.*, 2 *12-pr.*, 30 *3-pr.*, M.	5	23	1000	755
a.c.	**Monmouth**	9800	440	66	24½	22,000 B.	Glasgow	London & Glasgow Shipbg. Co.	1901	1903	979,591	4–2 K.S.	2–¾	4 K.S.	5 K.S.	5–4 N.S.	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	23·0	800 1600	500
a.c.	**Natal**	13,550	480	73½	27	23,592 Y² & Cyl.	Barrow	Vickers	1905	1906	1,215,599*	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 4 *7·5-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	23·33 *t*	1000	704
b. 1st cl.	**New Zealand**	16,350	425	78	26¾	18,440 B. & W. & Cyl.	Portsm'th	Humphrys	1904	1905	1,424,375*	9 K.S.	2–1	8–7 K.S.	12 K.S.	12 K.S.	6	4 *12-in.*, 4 *9·2-in.*, 10 *6-in.*, 14 *12-pr.*, 16 *3-pr.*, M.	4	18·59 *t*	950 2150	770
t. 2nd c.	**Nile**	11,940	345	73	27½	12,000	Pembroke	Maudslay	1888	1890	890,283	20–16 *comp.*	3	3	18–14 *comp.*	18 *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 22 *6-pr.*, *3-pr.*, & M.	3 (2 sub.)	16·7 *t*	900 1200	558
b. 1st cl.	**Ocean**	12,950	390	74	25½	13,500 B.	Devonport	Hawthorn	1898	1900	883,778	6 H.S.	2–1	..	12 H.S.	12–5 H.S.	5 H.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4 (4 sub.)	18·25	800 1850	700
b. 1st cl.	**Prince George**	14,900	390	75	27½	12,000	Portsm'th	Humphrys	1895	1896	895,504	9 H.S.	4–2½	..	14–9 H.S.	14–6 H.S.	6	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 2 l.	5	17·5	900 2200	757
b. 1st cl.	**Prince of Wales**	15,000	400	75	26¾	15,000 B.	Chatham	Greenock Foundry	1902	1904	1,114,079	9 K.S.	2–1	3	12 K.S.	12–6 N.S.	6–2 K.S.	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 8 *3-pr.*, & M.	4	18	900	755
b. 1st cl.	**Queen**	15,000	400	75	26¾	15,000 B. & W.	Devonport	Harland & Wolff	1902	1904	1,074,999											
b. 1st cl.	**Renown** shd.	12,350	380	72	26¾	12,000	Pembroke	Maudslay	1895	1896	709,706	8–6 H.S.	3–2	..	10–6 H.S.	10 H.S.	6–2	4 *10-in.*, 10 *6-in.*, 14 *12-pr.*, 12 *3-pr.*, 2 M., 2 l.	5 (2 sub.)	18·0	900 1450	674

* Details of cost incomplete.

Montagu lost on Lundy Island May 30, 1906.

GREAT BRITAIN.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns	Torpedo Tubes.			
																Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.						£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b. 1st cl.	**Ramillies**	14,150	380	75	27½	13,000	Glasgow	Thomson	1892	1893	902,600											
b 1st cl.	**Repulse**	14,150	380	75	27½	13,000	Pembroke	Humphrys	1892	1894	851,474	18–5 *comp.*	3	5–4 N.S.	16 *comp.*	17 *comp.*	6–2 K.N.C.	4 *13·5-in.*, 10 *6-in.*, 16 *6-pr.*, 12 *3-pr.*, 2 M., 2 l.	3 (2 sub.)	17·5	900 1450	730
b. 1st cl.	**Resolution**	14,150	380	75	27½	13,000	Jarrow	Palmer	1892	1893	875,522											
1st cl.	**Revenge**	14,150	380	75	27½	13,000	Jarrow	Palmer	1892	1895	876,101											
b. 1st cl.	**Royal Oak**	14,150	380	75	27½	13,000	Birkenh'd	Laird	1892	1894	899,272	18–5 *comp.*	3	5–4 N.S.	16 *comp.*	17 *comp.*	6–2 K.N.C.	4 *13·5-in.*, 10 *6-in.*, 16 *6-pr.*, 12 *3-pr.*, 2 M., 2 l.	3 (2 sub.)	17·5	900 1800	730
b. 1st cl.	**Royal Sovereign**	14,150	380	75	27½	13,312	Portsm'th	Humphrys	1891	1892	839,136											
b. 2nd c.	**Rodney**	10,300	325	68	27¼	11,500	Chatham	Humphrys	1884	1888	769,923	18 *comp.*	3–2½	..	16 *comp.*	11 *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 12 *6-pr.*, 10 *3-pr.*, 6 M., 2 l.	2	16·75	900 1200	515
a.c.	**Roxburgh**	10,850	450	68½	25	22,102 D. & cyl.	London & Glasgow	London & Glasgow Company	1904	1905	829,367	6–2 K.S.	2–¾	..	4½ K.S.	6 N.S.	6	4 *7·5-in.*, 6 *6-in.*, 2 *12-pr.*, 22 *3-pr.*, 2 M.	2	23·63 *t*	800 1600	655
b. 1st cl.	**Russell**	14,000	405	75½	26½	18,229 B.	Jarrow	Palmer	1901	1903	1,037,995	7 K.S.	2-1	1½ K.S.	14 K.S.	11–6 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	19·3 *t*	900 2000	750
a.c.	**Shannon**	14,600	490	75½	25	27,000 Y^2	Chatham	Humphrys	1906	..	1,415,535*	6–4	1–½	3	..	8	..	4 *9·2-in.*, 10 *7·5-in.*, 2 *12-pr.*, 30 *3-pr.*, & M.	5	23	950	755
a.c.	**Suffolk**	9800	440	66	24½	22,000 Nic.	Portsm'th	Humphrys	1903	1904	722,681	4–2 K.S.	2–¾	..	5 K.S.	5–4 N.S.	4 K.S.	14 *6-in.*, 10 *12-pr.*, 3 *3-pr.*, 9 M.	2	24·7 *t*	800 1600	500
a.c.	**Sutlej** shd.	12,000	440	69½	26¼	21,261 B.	Clydeb'nk	Clydebank Company	1899	1902	755,690	6 K.S.	3–2	..	5 K.S.	6 K.S.	5 K.S.	2 *9·2-in.*, 12 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 8 M., 2 l.	2	21·77 *t*	800 1600	755

b. 1st. c.	**Superb**	18,600	490	82	27	23,000	**Elswick**	**Wallsend**	..	..	..	..	..	..	..	..	..	..	..	21	900	..
	Temeraire						**Devonport**	**Hawthorn**														
b. 1st cl.	**Swiftsure**	11,800	436	71	24½	12,500	**Elswick**	**Humphrys, Tennant**	1903	1904	845,036	7	3	7	..	10	7 K.S.	4 *10-in.*, 14 *7·5-in.*, 14 *14-pr.*, 2 *12-pr.*, 12 *6-pr.*, & M.†	2	19·6 *t*	800 2000	700
b. 1st cl.	**Triumph**						Barrow	Vickers	1903		845,479											
t. 2nd c.	**Thunderer**	9330	285	62¼	27	7000	Pembroke	Maudslay	1872	1877	873,038	12–10	3–2	..	12–10	14–12	..	4 *10-in.*, 6 *6-pr.*, 8 *3-pr.*, 4 M., 2 l.	2	14·0	1600	592
t. 2nd c.	**Trafalgar**	11,940	345	73	27½	12,000	Portsm'th	Humphrys	1887	1890	819,192	20-16 *comp.*	3	3	18–14 *comp.*	18 *comp.*	..	4 *13·5-in.*, 6 *6-in.*, 22 *6-pr.*, *3-pr.*, & M.	3 (2 sub.)	16·7 *t*	900 1200	572
b. 1st cl.	**Victorious**	14,900	390	75	27½	12,000	Chatham	Hawthorn	1895	1897	885,212	9 H.S	3–2½	..	14–9 H.S.	14–6 H.S.	6	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 12 *3-pr.*, 8 M., 2 l.	5 (4 sub.)	17·5	900 2200	757
b. 1st cl.	**Venerable**	15,000	400	75	26¾	15,345 B.	Chatham	Maudslay	1899	1902	1,092,753	7 K.S.	4–2½	3	14 K.S.	11–6 K.S.	6–2	4 *12-in.*, 12 *6-in.*, 18 *12-pr.*, 8 *3-pr.*, & M.	2	18·3 *t*	900 2000	755
b. 1st cl.	**Vengeance**	12,950	390	74	26	13,500 B.	Barrow	Vickers	1899	1901	836,417	6 H.N.S.	2–1	..	12 H.N.S.	12–6 H.S.	5 H.S.	4 *12-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, & M.	4	18·5	800 1850	750
a.c.	**Warrior**	13,550	480	73½	27	23,641 Y^2 & cyl.	Pembroke	Wallsend, Slipway, etc., Co.	1905	1907	1,217,303*	6–4–3 K.S.	¾–1	6	6	6	6	6 *9·2-in.*, 4 *7·5-in.*, 2 *12-pr.*, 28 *3-pr.*, 2 M.	3	22·33	1000	701
	2 armoured ships, programme 1907–8‡	Details not published.																				

---

* Total estimated cost of ship, including guns.

† The Triumph carries only 8 6-pr., but has an additional torpedo tube.

‡ Or 3 "unless an understanding between the Naval Powers be arrived at by the Hague Conference."

The battleships **Colossus, Conqueror, Hero,** and **Sans Pareil** have been struck out of the "fighting division of the Navy," but their armaments have not been removed, and they are shown in the official Navy List as available for "subsidiary purposes." The battleships **Rupert** and **Collingwood,** and the cruisers **Aurora, Immortalité, Narcissus** and **Undaunted,** are to be sold.

GREAT BRITAIN.—Cruising Ships, &c.

Class.	NAME.		Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
													Deck.	Gun Position.	Guns.	Torpedo Tubes.			
			tons.	ft.	ft.	ft.						£	in.	in.			knots.	tons.	
Scout .	**Adventure**	..	2940	374	38¼	13½	15,850 Y mod.	Elswick .	Hawthorn.	1904	1905	270,263	2	¾	10 *12-pr.*, 8 *3-pr.* .		25·42 *t*	150	268
3rd cl. Cr. .	**Æolus** .	shd.	3600	300	43	17½	9000	Devonp'rt	Hawthorn.	1891	1893	213,180	2-1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	19·75	400 535	273
3rd cl. Cr. .	**Amethyst** .	.	3000	360	40	14½	14,200 Y mod.	Elswick .	Parsons Turbine	1903	1905	228,426	..	..	12 *4-in.*, 11 *3-pr.*, M. .	2	23·42 *t*	300	296
1st cl. Cr. .	**Amphitrite**	shd.	11,000	435	69	25¼	18,000 B.	Barrow .	Vickers .	1898	1900	552,795	4	3–6 H. S.	16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 M.	2 (1 sub.)	20·75	1000	677
1st cl. Cr. .	**Andromeda**	shd.	11,000	435	69	25¼	16,500 B.	Pembroke	Hawthorn.	1897	1900	574,916	3–6	3	16 *6-in.*, 14 *12-pr.*, 4 *3-pr.*, 2 M.	2	20·5	1000	600
1st cl. Cr. .	**Argonaut** .	shd.	11,000	435	69	25¼	18,000 B.	Fairfield .	Fairfield .	1898	1900	545,756	4	3–6 H. S.	16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 M.	2 (1 sub.)	20·75	1000	677
1st cl. Cr. .	**Ariadne** .	shd.	11,000	435	69	25¼	18,000 B.	Clydeb'nk	JohnBrown	1898	1900	541,927							
2nd cl. Cr. .	**Arrogant** .	.	5750	320	57½	21	10,000 B.	Devonp'rt	Earle .	1896	1898	279,248	1–2 N. S.	3 N.S.	10 *6-in.*, 9 *12-pr.*, 5 *3-pr.*, M.	2	19·6	500	480
3rd cl. Cr. .	**Astræa** .	shd.	4360	320	49½	19	9112	Devonp'rt	Devonport	1893	1894	254,217	2–1	3	2 *6-in.*, 8 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	19·75	400	312
Scout. .	**Attentive** .	.	2940	374	38¼	13½	16,212 Y.	Elswick .	Hawthorn .	1904	1906	270,263	2	¾	10 *12-pr.*, 8 *3-pr.* .	2	25·88 *t*	150	268
3rd cl. Cr. .	**Barham** .	.	1830	280	35	13¼	4700 T.	Portsm'th	Hawthorn .	1889	1890	113,702	2–1	2	6 *4·7-in.*, 4 *3-pr.*, 2 M.	2	18·6	140	169

T. D. S.	**Blake**		9000	375	65	25¾	20,000	Chatham	Maudslay	1889	1892	453,240	6–3	6	4 *6-in.*, 10 small.	2	21·5	1500	570
T. D. S.	**Blenheim**		9000	375	65	25¾	21,411	Blackwall	Humphrys	1890	1893	434,806							
3rd. cl. Cr.	**Boadicea**		3300	385	41	13½	..	Pembroke	..	Bldg.	..	..	..	..	..	3	..	..	..
P. 3rd cl. Cr.	**Bonaventure**	shd.	4360	320	49½	19	9000	Devonp'rt	Hawthorn	1892	1894	249,727	2–1	2	2 *6-in.*, 8 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	..	19·5	400	312
P. 3rd cl. Cr.	**Brilliant**	shd.	3600	300	43¾	17½	9164	Sheerness	Hawthorn	1891	1893	218,145	2–1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M	3	19·7	400	273
P. 3rd cl. Cr.	**Cambrian**	shd.	4360	320	49½	19	9000	Pembroke	Hawthorn	1893	1894	244,725	2–1	2	2 *6-in.*, 8 *4·7-in.*, 8 *6-pr.*, 1 *3-pr.*, 4 M., 1 l.	3	19·5	400	312
P. 2nd cl. Cr.	**Challenger**		5880	355	56	21¼	12.500 B.&W	Chatham	Wallsend Eng'ng Co.	1902	1904	360,194	..	..	11 *6-in.*, 9 *12-pr.*, 6 *3-pr.*, 2 M.	2	21·0	500	..
P. 3rd cl. Cr.	**Charybdis**	shd.	4360	320	49½	19	9000	Sheerness	Earle	1893	1895	241,029	2–1	2	2 *6-in.*, 8 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	19·5	400	312
T. G. B	**Circe**		810	230	27	8¾	5800 F.	Sheerness	Fairfield	1892	1893	65,683	..	2	2 *4·7-in.*, 4 *3-pr.*	5	21·6	100	91
P. 2nd cl. Cr.	**Crescent**	shd	7700	360	60	23¾	12,000	Portsm'th	Penn	1892	1894	392,453	5-1	6	1 *9·2-in.*, 12 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2 (1 sub.)	19·7	850	560
P. 1st cl. Cr.	**Diadem**	shd.	11,000	435	69	26	16,500 B.	Fairfield	Fairfield	1896	1899	554,863	4–2½	4½–2	16 *6-in.*, 14 *12-pr.*, 4 *3-pr.*, 2 M.	2 (1 sub.)	20·5	1000	357
P. 3rd cl. Cr.	**Diamond**		3000	360	40	14½	10,066 N. L.	Birkenh'd	Laird	1904	1905	231,010	..	..	12 *4-in.*, 11 *3-pr*, M.	2	22·17 *t*	300	296
P. 2nd cl. Cr.	**Diana**	shd.	5600	350	54	21	9600	Fairfield	Fairfield	1895	1898	253,009	2½	3	5 *6-in.*, 6 *4·7-in.*, 9 *12-pr.* 7 *3-pr.*, 5 M., 1 l.	3	19·5	550	470
„ „	**Dido**	shd.	5600	350	54	21	9600	Glasgow	London and Glasgow Co.	1896	1898	254,190	2½	3	11 *6-in.*, 9 *12-pr.*, 7 *3-pr.*, 5 M., 1 l.	3 (2 sub.)	19·5	550	470
„ „	**Doris**	shd.	5600	350	54	21	9600	Barrow	Vickers	1896	1898	256,306							

GREAT BRITAIN.—Cruising Ships, &c.—*continued.*

Class.	NAME.		Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
													Deck.	Gun Position.	Guns.	Torpedo Tubes.			
			tons.	ft.	ft.	ft.						£	in.	in.			knots.	tons.	
T. G. B.	**Dryad**		1070	250	30½	9	3500	Chatham	Maudslay	1893	1894	74,174	..	2	2 4·7-*in.*, 4 6-*pr.*	5	19·0	100	120
P. 2nd cl. Cr.	**Eclipse**	shd.	5600	350	53	20¼	9600	Portsm'th	Portsm'th	1894	1897	276,313	1½–3	3	5 6-*in.*, 6 4·2-*in.*, 9 12-*pr.*, 8 3-*pr.*, M.	3	19·5	550	477
P. 2nd cl. Cr.	**Edgar**		7350	360	60	23¾	12,000	Devonp'rt	Fairfield	1890	1893	410,980	5–1	6	2 9·2-*in.*, 10 6-*in.*, 2 12-*pr.*, 19 6-*pr.*, 3-*pr.*, M.	4	20·5	850	544
P. 2nd cl. Cr.	**Encounter**		5880	355	56	20¼	12,500 Dürr	Devonp'rt	Devonport Dockyard	1903	1906	370,275	..	..	11 6-*in.*, 9 12-*pr.*, 8 3-*pr.*, 2 M.	2	20·75 to 21·0	600	..
P. 2nd cl. Cr.	**Endymion**		7350	360	60	23¾	12,000	Hull	Earle	1891	1894	375,350	5–1	6	2 9·2-*in.*, 10 6-*in.*, 2 12-*pr.*, 19 6-*pr.*, 3-*pr.*, M.	2	20·5	850	544
P. 1st cl. Cr.	**Europa**	shd.	11,000	435	69	26	16,500 B.	Clydeb'nk	Thomson	1897	1899	564,690	4–2½	4½–2	16 6-*in.*, 14 12-*pr.*, 4 3-*pr.*, 2 M.	2	20·5	1000	357
P. 3rd cl. Cr.	**Flora**	shd.	4360	320	49½	19	9000	Pembroke	Vickers	1893	1895	242,276	..	..	2 6-*in.*, 8 4·7-*in.*, 1 12-*pr.*, 13 6-*pr.*, 3-*pr.*, M.	3	19·5	400	312
" "	**Forte**	shd.	4360	320	49½	19	9000	Chatham	Chatham	1893	1895	240,571	2–1	2	2 6-*in.*, 8 4·7-*in.*, 8 6-*pr.*, 1 3-*pr.*, 4 M., 1 l.				
" "	**Fox**	shd.	4360	320	49½	19	9000	Portsm'th	Portsm'th	1893	1895	245,571							
P. Scout	**Foresight**		2945	360	39	14	14,277 T.	Fairfield	Fairfield	1904	1905	285,672	1½–⅝	..	10 12-*pr.*, 8 3-*pr.*	2	25·12 *t*	150 380	268
"	**Forward**						15,018 T.					285,326					25·15 *t*		

P. 2nd cl. Cr.	**Furious**	shd.	5750	320	57½	21	10,000 B.	Devonp'rt	Earle	1896	1899	275,158	1–2	8	10 *6-in.*, 9 *12-pr.*, 8 *3-pr.*, 5 M., 1 l.	2	19·0	500	480
" "	**Gladiator**	shd.					10,000 B.	Portsm'th	Maudslay	1896	1900	287,604							
" "	**Gibraltar**	shd.	7700	360	60	23¾	12,000	Glasgow	Napier	1892	1894	373,236	5–1	6	2 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2	19·7	850	544
T. G. B.	**Gossamer**		735	230	27	8¼	6000	Sheerness	Sheerness	1890	1891	52,416	..	2	2 *4·7-in.*, 3 *4-pr.*	2	20·0	100	91
P. 2nd cl. Cr.	**Grafton**		7350	360	60	23¾	12,000	Blackwall	Humphrys	1892	1894	372,890	..	6	2 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2	20·0	850	560
T. G. B.	**Halcyon**		1070	250	30½	9	6000 L.W.R	Devonp'rt	Cammell Laird	1894	1895	75,206	..	2	2 *4·7-in.*, 5 *6-pr.*	5	19·0	100	120
"	**Harrier**		1070	250	30½	9	3500	Devonp'rt	Hawthorn	1894	1895	73,036	..						
P. 2nd cl. Cr.	**Hawke**		7350	360	60	23¾	12,000	Chatham	Fairfield	1891	1893	400,702	5–1	6	2 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2	20·0	850	544
T. G. B.	**Hazard**		1070	250	30½	9	3500	Pembroke	Fairfield	1894	1894	77,322	..	2	2 *4·7-in.*, 5 *6-pr.*	3	19·0	100	120
T. G. B.	**Hebe**																		
P. 2nd cl. Cr.	**Hermes**	shd.	5600	350	54	20½	10,000 B.&W.	Fairfield	Fairfield	1898	1900 1902	281,776	1½–3	3	11 *6-in.*, 9 *12-pr.*, 8 *3-pr.*, 2 M.	2	20·0	600	477
" "	**Highflyer**	shd.	5600	350	54	20½	10,000 B.	Fairfield	Fairfield	1898	1900	280,182							
" "	**Hyacinth**	shd.	5600	350	54	20½	10,000	Glasgow	London and Glasgow Co.	1898	1901	288,595							
P. 3rd cl. Cr.	**Hermione**	shd.	4360	320	49½	19	9000	Devonp'rt	Thomson	1893	1895	223,324	2–1	2	2 *6-in.*, 8 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	19·5	400	312
T. G. B.	**Hussar**		1070	250	30½	9	3500	Devonp'rt	Hawthorn	1894	1895	72,313	..	2	2 *4·7-in.*, 5 *6-pr.*, M.	5	19·0	100	120

GREAT BRITAIN.—Cruising Ships, &c.—*continued.*

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
												Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						£	in.	in.			knots.	tons.	
P. 3rd cl. Cr.	**Indefatigable** shd.	3600	300	43¾	17½	9000	Glasgow .	London and Glasgow Co.	1891	1892	183,568	2–1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	19·75	400	273
” ”	**Iphigenia** . shd.	3600	300	43¾	17½	9000	Glasgow .	London and Glasgow Co.	1891	1893	186,146							
P. 2nd cl. Cr.	**Isis** . . shd.	5600	350	54	21	9600	Glasgow .	London and Glasgow Co.	1896	1898	253,733	2½	3	11 *6-in.*, 9 *12-pr.*, 7 *3-pr.*, 5 M., 1 l.	3 (2 sub.)	19·5	550	470
” ”	**Juno** . shd.	5600	350	54	21	9600	Barrow .	Vickers .	1895	1898	256,106							
T. G. B. .	**Jason*** . .	810	230	27	8¾	5800 R.	Barrow .	Vickers .	1892	1893 1902	50,161	..	2	2 *4·7-in.*, 4 *3-pr.*, M. .	3	21·9 *t*	100	91
P. 3rd cl .Cr.	**Latona** . .	3400	300	43	16½	9000	Barrow .	Vickers .	1890	1892	174,017	2	2–1	2 *6-in.*, 6 *4·7-in.*, 8 *6-pr.*, 1 *3-pr.*, 4 M., 1 l.	3	20·0	400	273
T. G. B. .	**Leda*** . .	810	230	27	8¾	5800 T.	Sheerness	Penn .	1892	1894	62,789	2	..	2 *4·7-in.*, 4 *3-pr.*, M. .	5	21·8	100	91
P. 2nd cl. Cr.	**Minerva** . shd.	5600	350	53	20½	9600	Chatham.	Chatham .	1895	1897	275,331	1½-3	3	11 *6-in.*, 9 *12-pr.*, 8 *3-pr.*, 5 M.	2 (2 sub.)	19·5	550	437
P. 1st cl. Cr.	**Niobe** . shd.	11,000	435	69	26	16,500 B.	Barrow .	Vickers .	1897	1899	548,283	4–2½	4½–2	16 *6-in.*, 14 *12-pr.*, 5 *3-pr.*, 2 M.	2 (2 sub.)	20·5	1000	600
T. G. B. .	**Niger** . .	810	230	27	8¾	6282 R.	Barrow .	Vickers .	1892	1894 1902	50,572	..	2	2 *4·7-in.*, 4 *3-pr.*, M. .	3	20·5 *t*	100	91
P. Scout .	**Pathfinder**	3000	370	38¾	14	17,176 L.N.	Birknhd.	Laird .	1904	1905	273,147	½–⅝	..	10 *12-pr.*, 8 *3-pr.* .	2	25·34 *t*	150 380	268
” .	**Patrol** .					16,460					273,523					25·06 *t*		

P. 3rd cl. Cr.	**Pandora** .	. 2200	305	36¾	13½	7000 T.	Portsm'th	Portsm'th	1900	1901	165,218*					.	
„ „	**Pegasus** .	. 2135	300	36½	17	7000 R.	Jarrow .	Palmer .	1897	1899	134,919						
„ „	**Pelorus** .	. 2135	300	36½	17	7000 Nor.	Sheerness	Thomson .	1896	1897	154,315						
„ „	**Perseus** .	. 2135	300	36½	13½	7000 T.	Hull	Earle .	1897	1901	133,461						
„ „	**Pioneer** .	. 2200	305	36¾	13½	7000 T.	Chatham.	Fairfield .	1899	1900	148,894	2	·22	8 *4-in.*, 8 *3-pr.*, 2 l. .	2	20·0	250 517	224
„ „	**Prometheus**	. 2135	300	36½	13½	7000 T.	Hull .	Earle .	1898	1901	131,743						
„ „	**Psyche** .	. 2200	305	36¾	17½	7000 T.	Devonp'rt	Devonport	1898	1900	156,890						
„ „	**Proserpine**	. 2135	300	36½	17	7000 T.	Sheerness	Devonport	1896	1899	165,020						
„ „	**Pyramus**	. 2135	300	36½	13½	7000 R.	Jarrow .	Palmer .	1897	1900	135,249						
P. 1st cl. Cr.	**Powerful** . shd.	14,200	500	71	29	25,000 B.	Barrow .	Vickers .	1895	1898	705,335	3–6	6	2 *9·2-in.*, 16 *6-in.*, 16 *12-pr.*, 14 *3-pr.*, M.	4	22·1	1500 3000	840
P. 2nd cl. Cr.	**Royal Arthur** shd.	7700	360	60	27¾	12,000	Portsm'th	Maudslay .	1891	1893	412,033	5–1	6	1 *9·2-in.*, 12 *6-in.*, 12 *6-pr.*, 5 *3-pr.*, 6 M., 2 l.	2 (2 sub.)	19·7	850	567
P. 2nd cl. Cr.	**St. George**. shd.	7700	360	60¾	23¾	12,000	Hull .	. Maudslay .	1892	1894	399,755	5–1	6	2 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2 (2 sub.)	19·7	850	559
P. 3rd cl. Cr.	**Sapphire** .	. 3000	360	40	14½	10,200	Palmer .	Palmer .	1904	1905	226,277	..	..	12 *4-in.*, 8 *3-pr.* . .	2	22·45 *t*	300	296
„ „	**Sappho** .	. 3400	300	43	16½	9861	Poplar .	Penn	1891	1893	176,813	2–1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, *6-pr.*, 13 *3-pr.*, M.	4	20·47	400	273
„ „	**Scylla** .	. 3400	300	43	16½	9280	Poplar .	Penn .	1892	1893	176,655	2–1	2		4	20·62	400	273
P. Scout .	**Sentinel** .	. 2940	360	40	14¼	17,488 Nor. V.E.	Barrow .	Vickers .	1904	1905	276,837	1½–⅝	..	10 *12-pr.*, 8 *3-pr.* . .	2	25·07 *t*	150 410	268

* Re-engined and reboilered.

GREAT BRITAIN.—Cruising Ships, &c.—*continued.*

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
												Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						£	in.	in.			knots.	tons.	
P. Scout .	**Skirmisher** .	2940	360	40	14¼	17,053 Nor.	Barrow .	Vickers .	1905	1905	276,579	1½–⅝	..	10 *12-pr.*, 8 *3-pr.* .	2	25·19	150	268
T. G. B. .	**Skipjack** . .	735	230	27	8¼	6000 R.	Chatham .	Laird .	1889	1890 1899	61,102	..	2	2 *4·7-in.*, 5 *3-pr.* .	5	20·5	100	91
„ .	**Speedwell** .	735	230	27	8¼	6000 R.	Devonp'rt	Laird .	1889	1890 1899	60,837							
P. 1st cl. Cr.	**Spartiate** . shd.	11,000	435	69	26	18,658	Pembroke	Maudslay .	1898	1902	654,661	4–2½	4½–2	16 *6-in.*, 14 *12-pr.*, 3 *3-pr.*, 2 M.	2 (2 sub.)	21·0 *t*	1000	600
P. 3rd cl. Cr.	**Sirius** . shd.	3600	300	43¾	17½	9000	Elswick .	Maudslay .	1890	1892	190,991	2–1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	4	19·75	400	273
T. G. B. .	**Speedy** . .	810	230	27	8¾	4703 T.	Chiswick	Thornycrft	1893	1894	61,638	..	2	2 *4·7-in.*, 4 *3-pr.* .	3	20·21	100	91
Special Des.	**Swift.** . .	1800	345	34⅙	10½	30,000	Birkenh'd	Cammell Laird	1907	..	280,509	..	..	*4·4-in.*	..	36	180	
P. 2nd cl. Cr.	**Talbot** . shd.	5600	350	53½	21	9600	Devonpr't	Devonport	1895	1897	263,699	1½–3	3	5 *6-in.*, 6 *4·7-in.*, 9 *12-pr.*, 3 *3-pr.*, M.	3 (2 sub.)	19·5	550	433
P. 3rd cl. Cr.	**Terpsichore** .	3400	300	43	16½	9000	Glasgow .	Thomson .	1890	1892	176,616	2–1	2	2 *6-in.*, 6 *4·7-in.*, 1 *12-pr.*, 13 *6-pr.*, *3-pr.*, M.	3	20·0	400	275
P. 1st cl. Cr.	**Terrible** . shd.	14,200	500	71	27	25,000 B.	Glasgow .	Thomson .	1895	1898	708,619	3–6	6	2 *9·2-in.*, 16 *6-in.*, 14 *12-pr.*, 8 *3-pr.*, 9 M., 2 *12-pr.* boat.	4	22·4	1500 3000	840
P. 2nd cl. Cr.	**Theseus** . .	7350	360	60	23¾	12,000	Blackwall	Maudslay .	1892	1894	370,359	5–1	6	2 *9·2-in.*, 10 *6-in.*, 2 *12-pr.*, 19 *6-pr.*, *3-pr.*, M.	2 (2 sub.)	20·0	850	544

P. 3rd cl. Cr.	**Thetis** . .	3400	300	43	16½	9000	Glasgow .	Thomson .	1890	1892	175,862	2–1	2	2 *6-in.*, 6 *4·7-in.*, 8 *3-pr.*, 1 *3-pr.*, 4 M., 1 l.	3	20·0	400	273
P. 3rd cl. Cr.	**Topaze** . .	3000	360	40	14½	9860 L.N.	Birkenh'd	Laird .	1903	1905	242,444	..	..	12 *4-in.*, 11 *3-pr.*, M. .	2	22·1 *t*	300	296
P. 2nd cl. Cr.	**Venus** . shd.	5600	350	54	21½	9600	Fairfield .	Fairfield .	1895	1898	254,184	2½	3	11 *6-in.*, 9 *12-pr.*, 7 *3-pr.*, 4 M., 1 l.	3 (2 sub.)	19·5	550	470
„ „	**Vindictive** .	5750	320	54	20½	10,000 B.	Chatham	Chatham .	1897	1897	282,879	1–2 N.S.	3	10 *6-in.*, 9 *12-pr.*, 3 *3-pr.*, 5 M., 1 l.	2	20·1	500	450
T. D. S. .	**Vulcan** . .	6620	350	58	23	12,032	Portsm'th	Humphrys	1889	1894	380,831	5–2½	2	8 *4·7-in.*, 1 *12-pr.*, 14 *3-pr.*, M.	(2 sub.)	20·0	1000	433

River Gunboats.—**Robin, Nightingale, Snipe, Sandpiper** (1897), 85 tons; **Woodcock, Woodlark** (1898), 122 tons, 2 6-prs., 4 Maxims; **Kinsha** (1901), **Teal, Moorhen** (1902), 180 tons, 2 6-prs., 13 knots; **Widgeon** (1905).

The following vessels have been struck off the effective list, but the armaments have not in every case been removed:—*3rd Class Cruisers:* **Andromache, Apollo, Intrepid, Melampus, Naiad, Pique, Rainbow, Retribution, Spartan,** and **Tribune,** which were built under the Naval Defence Act; **Pomone** and **Pactolus** (completed 1900–1); **Medea** and **Medusa** (re-engined and reboilered 1905); **Philomel.** *Torpedo-Gunboats:* **Alarm, Antelope, Sheldrake,** and **Onyx.** The following small craft have been placed on a "Special Service List" of "unprotected ships": **Sphinx, Lapwing, Redbreast** (East Indies), **Ringdove** (Fishery P.), **Dwarf** (W. C. Africa), **Shearwater** (British Columbia), **Bramble, Britomart, Clio,** and **Cadmus** (China).

Royal Naval Reserved Merchant Cruisers.

—	Name.	Owners.	Length.	Breadth.	Draught of Water for the Admiralty List.	Gross Tonnage.	Indicated Horse-Power.	Ocean Speed.
Ships in receipt of an annual subvention and permitted to fly the blue ensign.	**Mauretania** . . .	Cunard Co.	Feet. 785	Feet. 88	Feet. 37	Tons. 32,500*	68,000*	Knots. 25†
	Lusitania	„	785	88	33	32,500*	68,000*	25†
	Campania	„	610	65	26	12,950	30,000	21
	Lucania	„	610	65	26	12,952	30,000	21
	Umbria	„	501½	57	26	8,128	14,500	19½

* Estimated. † Designed Speed.

In addition to the above, the Cunard Company holds all vessels, for the time being the property of the Company, at the disposal of His Majesty's Government for hire or purchase.

ARGENTINE REPUBLIC.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in	in.	in.	in.	in.			knots.	tons.	
c.b.	**Almirante Brown** .	4267	240	50	20½	4500	Poplar .	1880	1882	270,000	9 *comp.*	1½	8 *comp.*	7 *comp.*	8 *comp.*	..	10 5·9-*in.* (Canet), 4 4·7-*in.*, 8 2·4-*in.*, 2 M.	2	13·75 *t*	650	350
a.c.	**Garibaldi** . .	6732	328	59¾	24	13,384	Sestri Ponente	1895	1896	752,000	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	2 10-*in.*, 10 6-*in.*, 6 4·7-*in.*, 10 2·2-*in.*, 10 1·4-*in.*, 2 M.*	..	19·9 *t*	1000	500
a.c.	**General Belgrano** .	7069	328	59¾	24	13,000	Leghorn .	1897	1899	696,700	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	2 10-*in.*, 14 6-*in.*, 2 3-*in.*, 10 2·2-*in.*, 8 1·4-*in.*, 2 L., 2 M.	4 sub.	20·1 *t*	1000	500
a.c.	**General San Martin**	6773	328	59¾	24	13,000	Leghorn .	1896	1898	688,200	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	4 8-*in.*, 10 6-*in.*, 6 4·7-*in.*, 12 2·2-*in.*, 10 1·4-*in.*, 2 L., 2M.*	4 sub.	19·8	1100	500
c.d.s.b.	**Independencia** .	2336	230	44¼	13	3000	Birkenhead .	1891	1893	176,000	8 *comp.*	2	..	8 *comp.*	8 *comp.*	..	2 9·4-*in.*, 4 4·7-*in.* (A), 4 3-*pr.* (A), 4 M.	2	14·4 *t*	340	225
c.d.s.b.	**Libertad** . . .	2336	230	44¼	13	3000	Birkenhead .	1890	1892	176,000											
a.c.	**Pueyrredon** . .	6773	328	59¾	24	13,000 B.	Sestri Ponente	1898	1901	782,000	6–3 H.S.	1½	6 H.S.	5 H.S.	6 H.S.	6 H.S.	2 10-*in.*, 10 6-*in.*, 6 4·7-*in.*, 10 2·2-*in.*, 10 1·4-*in.*, 2 M.*	4 sub.	20·1 *t*	1000	500

* Garibaldi, General San Martin, General Belgrano and Pueyrredon have Armstrong guns.

ARGENTINE REPUBLIC.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
cr.	**Buenos Aires** shd.	4780	396	47¼	19	17,000	Elswick	1895	1895	383,000	..	4½	2 *8-in.* (A.), 4 *6-in.*, 6 *4·7-in.*, 16 *3-pr.*, 6 *1-pr.*	5	23·2* *t*	1000†	429
to.g.b.	**Espora**	520	210	25	8	3500	Birkenhead	1890	1891	..	..	..	3 *3-in.*, 4 *3-pr.*, 2 M.	5	20·0	100	124
cr.	**Nueve de Julio**	3570	354	44	19½	14,350	Elswick	1892	1892	293,000	4½	4½	4 *6-in.* (A.), 8 *4·7-in.*, 12 *3-pr.*, 12 *1-pr.*	5	22·74 *t*	770†	300
cr.	**Patagonia**	1419	220	32¾	12¾	2400	Trieste	1885	1887	100,000	1½	4	1 *10-in.*, 3 *6-in.*, 6 l., 10 M.	5	13·0	350	210
to.g.b.	**Patria**	1070	250	31	10	4500	Birkenhead	1893	1894	87,000	..	..	2 *4·7-in.*, 4 *8-pr.*, 2 *3-pr.*, 2 M.	5	20·75 *t*	288	159
cr.	**25 de Mayo**	3200	325	43	16	13,800	Elswick	1890	1892	260,000	4½	4½	2 *8·2-in.* (A.), 8 *4·7-in.*, 12 *3-pr.*, 12 *1-pr.*	6	22·43 *t*	600†	185

* Natural draught. † Bunker capacity.

The training-ship (cruiser) Presidente Sarmiento, 2750 tons, 2000 I.H.P. (Niclausse boilers), and 13 knots speed, with 19 guns and three torpedo tubes; launched by Messrs. Laird, 1897. There are two old gun vessels, Paraná and Uruguay, 550 tons (1874), and several other small gunboats; also the torpedo-ram Maipù (1063 tons, 1750 I.H.P.), built in England in 1880. The Arno, Regina Margherita, Sempione, Pampa and Gaucho, converted merchant vessels.

AUSTRIA-HUNGARY.—Armoured Ships.

											Armour.						Armament.				
															Gun Position.						
Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Belt.	Deck.	Side above belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.	Speed.	Coal	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	·
c.d.s.b.	Arpád . Babenberg	8208	354¼	65¾	23¼	15,000 B.	Trieste	1901 1902	1903 1904	650,900 667,000	8½ K.S.	2½	4 K.S.	8 K.S.	8¼ K.S.	5 K.S.	3 9·4-*in.*, 12 5·9-*in.*, 10 2·8-*in.*, 8 M., 2 l.	2 (sub)	19·6 *t*	500 840	638
c.d.s.	Budapest .	5462	305	55¾	21	9185 B.	Trieste .	1896	1897	400,600	10½ H.S.	2½	3¼ H.S.	8 H.S.	10½ H.S.	3¼ H.S.	4 9·4-*in.*, 6 5·9-*in.*, 12 1·8-*in.*, 6 M., 2 l.	4	17·8 *t* 20·57	500	450
b. b. b.	Erzherzog Friedrich Erzherzog Karl Erzherzog Ferdinand Max	10433	390½	72¼	24½	18,340 *t.*, Y. 14,000 Y.	Trieste	1904 1903 1905	1906 1906	912,500	8¼ K.S.	3	5 K.S.	8 K.S.	9¼ K.S.	7 K.S.	4 9·4-*in.*, 12 7·5-*in.*, 12 2·8-*in.*, 6 1·8 *in.*, 8 M., 2 l.	2 (sub)	19·25	1315	..
b.	Habsburg .	8208	354¼	65¾	23¼	15,000 B.	Trieste .	1900	1902	626,000	8½ H.S.	2½	4 H.S.	8 H.S.	8¼ H.S.	5 H.S.	3 9·4-*in.*, 12 5·9-*in.*, 10 2·8-*in.*, 8 M., 2 l.	2 (sub)	19·6 *t*	500 840	638
a.c	Kaiserin Maria Theresia	5187	351	52½	21¼	9755	Trieste .	1893	1895	304,187	4	2	..	4	4	4	2 9·4-*in.*, 8 5·9-*in.*, 14 1·8-*in.*, 6 M., 2 l.	4	19·0	740	502
a.c	Kaiser Karl VI.	6151	367½	56	20¼	12,800 B.	Trieste .	1898	1900	429,000	10 H.S.	1½	6 H.S.	8 H.S.	8¾ H.S.	6 H.S.	2 9·4-*in.*, 8 5·9-*in.*, 16 1·8-*in.*, 4 M., 2 l.	4	20·7 *t*	800	535
c.d.s.	Monarch .	5550	305	55¾	21	8900	Pola .	1895	1898	399,062	10½ H.S.	2½	3¼ H.S.	8 H.S.	10½ H.S.	3¼ H.S.	4 9·4-*in.*, 6 5·9-*in.*, 12 1·8-*in.*, 6 M., 2 l.	4	17·4 *t*	500	450
a. c.	St. Georg .	7185	383¾	61¾	21¼	15,270 *t* Y.	Pola .	1903	1906	581,583	8¼–6½ K.S.	1½	5 K.S.	7 K.S.	8¼–5¼ K.S.	6 K.S.	2 9·4-*in.*, 5 7·5-*in.*, 4 5·9-*in.*, 9 2·8-*in.*, 14 M., 2 l.	2 (sub)	22 *t*	1000	..
c.d.s.	Wien .	5550	305	55¾	21	8480	Trieste	1895	1897	397,850	10½ H.S.	2½ H.S.	3¼ H.S.	8 H.S.	10½ H.S.	3¼ H.S.	4 9·4-*in.*, 6 5·9-*in.*, 12 1·8-*in.*, 6 M., 2 l.	4	17·6 *t*	500	450
..	3 ships .	14500	..	..	..	..	..	Pro.	..	..	..	..	..	..	..	..	4 12-*in.*, 8 9·4-*in.*, 20 4·1-*in.*	..	20·5	..	..

Six armoured river monitors, Bodrog, Körös, Leitha, Maros, Szamos, and Temes, of 300–437 tons displacement. Kronprinz Rudolph (6830 tons) and Kronprinzessin Stephanie (5069 tons), launched 1887, **are used as harbour-defence and barrack ships.**

AUSTRIA-HUNGARY.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
to. cr.	**Aspern**	2362	301¾	39½	14¼	7300 Y	Pola	1899	1901	155,000	2	..	8 *4·7-in.*, 8 *1·8-in.*, 4 M.	1	20·0	470 500	289
to. g. b.	**Blitz**	354	193½	22¼	8	3500	Elbing	1888	1899	..	..	..	8 *1·8-in.*	4	21·0	250	59
cr. 2nd cl.	**Kaiserin Elizabeth**	4000	321½	47½	18½	8000	Pola	1890	1892	..	2¼	3½	2 *9·4-in.* (K.), 6 *5·9-in.* do., 13 *1·8-in.*, 4 M., 2 l.	5	19·0	660	418
cr. 2nd cl.	**Kaiser Franz Josef I.**	3966	321½	47½	18½	8000	Trieste	1889	1891	..	2¼	3½	2 *9·4-in.* (K.), 6 *5·9-in.* do., 16 *1·8-in.*, 2 l.	5	19·0	660	426
to. g. b.	**Komet**	354	193½	22¼	8	3500	Elbing	1888	1889	..	..	..	9 *1·8-in.*	4	21·0	50	59
cr. 3rd cl.	**Leopard**	1506	224	34	14	6000	Elswick	1886	1888	200,000	..	..	2 *4·7-in.*, 10 *1·8-in.*	4	18·3	250	186
g. b.	**Lussin**	995	200¼	26¼	12¼	1830 Dürr.	Trieste	1883	1885	..	1½	..	2 *5·9-in.* (K.), 7 M., 1 l.	..	14·0	200	154
to. g. b.	**Magnet**	502	220	26¾	8	5000 T	Elbing	1896	1899	51,052	..	..	6 *1·8-in.*	3	26·0	105	80
to. g. b.	**Meteor**	344	187	22¼	8	3500	Elbing	1887	1889	..	..	..	9 *1·8-in.*	4	*t* 23·1	120	59
cr. 3rd cl.	**Panther**	1506	224	34	14	6000	Elswick	1885	1887	..	..	..	2 *4·7-in.*, 10 *1·8-in*	1	18·5	250	186
T. D. S.	**Pelikan**	2431	279	39¼	15½	4600	Elbing	1891	1893	..	..	..	2 *5·9-in.* (K.), 8 smaller	4	18·0	..	198
to. g. b.	**Planet**	492	210	23	8¼	3500	Jarrow	1889	1890	..	..	..	2 *2·8 in.*, 8 *1·8-in.*	3	19·6	78	84
to. g.b.	**Satellit**	531	220	26¾	9¼	4000	Elbing	1893	1893	..	1½	..	1 *2 8-in.*, 8 *1·S-in.*	..	21·87	76	84
to. cr.	**Szigètvár**	2313	301¾	39½	14¼	7300 Y.	Pola	1899	1901	155,000	2	..	8 *4·7-in.*, 8 *1·8-in.*, 4 M.	1	20·0	470 500	289
to. g. b.	**Trabant**	522	220	23	8¼	3500	Trieste	1890	1891	..	..	..	2 *2·8-in.*, 8 *1·8-in.*	3	20·0	..	84
to. v.	**Zara**	837	179½	26¼	12¼	800	Pola	1879	1880	..	..	..	7 Q.F., 5 l.	..	14·0	150	142
to. cr.	**Zenta**	2264	301¾	39½	12¼	7300 Y.	Trieste	1897	1899	143,780	2	..	8 *4·7-in.*, 8 *1·8-in.*, 4 M.	1	20·9	470 500	289
cr. 3rd cl.	**F**	3500	..	..	..	..	Pola	Pro.	..	..	..	..	..	..	*t* 26·0	..	..

Four screw gunboats, between 540 and 870 tons displacement and 250 and 950 indicated horse-power.
Five patrol boats (30 tons, 2000 H.P.) have been completed for the Danube, two of them fitted with Parsons turbines.
Donau, training corvette, launched at Pola, 1893 (2307 tons).

BRAZIL.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkheads.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
t. River	**Alagoäs** .	335	120	28	4¾	180	Brazil . .	1886	1888	..	4½	4½	..	..	4½	..	1 *7-in.* M.L.R. (Whitworth), 2 M.	..	7·0	..	43
t. River	**Maranhao** .	463	137	34½	6½	700	Rio de Janeiro	1890	1892	..	5 H.S.	2	..	..	6	..	2 *4·7-in.*, 1 *2·5-in.*, 5 M. . .	..	12·0	..	..
c.d s., t.	**Marshal Deodoro**	3112	267½	48	13¼	3400 D'A.	La Seyne	1898	1900	..	13¾–4 H.S.	1½	..	..	8 H.S.	3 H.S.	2 *9·4-in.*, 2 *5·9-in.* howitzers, 4 *4·7-in.*, 2 M., 4 *6-pr.*, 2 *1-pr.*	2 (sub.)	15·0	236	200
c.d.s., t.	**Marshal Floriano**							1899	1901												
t. River	**Pará** . . .	463	137	34½	6½	700	Rio de Janeiro	1890	1892	..	5 H.S.	..	..	..	..	..	2 *4·7-in.*, 1 *2·5-in.*, 5 M. . .	..	12·0	..	..
t. River	**Pernambuco** .	463	137	34½	6½	700	Rio de Janeiro	1905	Bdg.	..	5 H.S.	2	..	..	6	..	2 *4·7-in.*, 1 *2·5-in.*, 5 M. . .	..	12·0	..	..
t. River	**Piauhy** . .	335	120	28	4¾	180	Brazil .	1887	1889	..	4½	4½	..	..	4½	..	1 *7-in.* M.L.R. (Whitworth) .	..	7·0	..	43
t.	**Riachuelo** sh'd.	5700	305	52	19½	7300	Poplar .	1883 1895	1888	365,000*	11 *comp.*	2	..	10 *comp.*	10 *comp.*	..	4 *9·2-in.* (Whitworth, altered by Armstrong), 6 *4·7-in.*, 2 *3-pr.*, 15 M.	5	16·71	800	450
b.	2 Battleships † .	..	..	..	..	..	Barrow . Elswick .	Bldg.	..	..	..	..	..	..	..	..	..	..	..	..	..

* Exclusive of guns and ammunition.

† Characteristics not known.

Another battleship and three armoured cruisers are projected.

BRAZIL.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						in.	in.			knots.	tons.	
cr.	Almirante Tamandare shd.	4660	294	46	18¼	7500	Brazil	1890	1893	..	1½	3	10 *6-in.*, 2 *4·7-in.*, 8 M.	8	17·0	750	450
"	Andrada shd.	2559	252¾	34	18	3600	Bergen	1890	1892	..	..	..	2 *4·7-in.*, 2 *14-pr.*, 6 *6-pr.*, 6 *1-pr.*	5	17·0	..	300
"	Barroso shd.	3600	330	43¾	16¾	7500	Elswick	1896	1897	..	3	4½ shields	6 *6-in.*, 4 *4·7-in.*, 10 *6-pr.*, 4 *1-pr.*, 4 M.	3	20·0	700	300
"	Benjamin Constant shd.	2707	236	46	18	2800	La Seyne	1892	1894	..	2	..	4 *6-in.*, 8 *4·7-in.*, 8 M., 4 l.	4	14·0	260	287
to.cr.	Caramuru	1014	249½	30¾	10¼	6000	Kiel	1896	1897	..	½	.	2 *3·9-in.*, 6 *2·2-in.*, 2 *1·4-in.*	3	22·5	..	..
to.g.b.	Gustavo Sampaio	500	197	21	7¾	2500	Elswick	1893	1894	..	..	..	2 *20-pr.*, 4 *7-pr.*	3	18·0	150	95
cr.	Quinze de Novembro	1300	210	35	13	750	Elswick.	1892	1894	..	2–1	..	6 *4·7-in.*, 4 *6-pr.*, 6 M.	4	17·0	170	160
to.cr.	Tamoyo	1063	269	28¾	9¾	6500	Kiel	1898	1900	..	..	4½ shields	2 *3·9-in.*, 6 *2·2-in.*, 2 *1·4-in.*, 2 M.	3	23·0	293	110
"	Timbira	1014	249½	30¾	10¼	7000	Kiel	1896	1897	..	½	4½ shields	2 *3·9-in.*, 6 *2·2-in.*, 2 *1·4-in.*, 2 M.	3	22·5	250	110
g.v.	Tiradentes shd.	800	165	30	11	1200	Elswick	1892	1893	..	..	..	4 *4·7-in.*, 3 *6-pr.*, 4 M.	2	14·5	110	107
to.cr.	Tupy	1014	249½	30¾	10¼	7000	Kiel	1896	1897	..	½	4½ shields	2 *3·9-in.*, 6 *2·2-in.*, 2 *1·4-in.*, 2 M.	3	22·5	250	110

Eleven screw gunboats, 200 tons to 400 tons, and four 12-knot river gunboats built at Poplar.

CHILI.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Comp'etion.	Cost.	Armour.						Armament.		Speed.	Coal.	Comp lement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			kts.	tons.	
a.c.	Almirante O'Higgins shd.	8500	411¾	62½	22	16,000 B.	Elswick .	1897	1898	..	7–5	2	..	..	7½–6	6	4 *8-in.*, 10 *6-in.*, 4 *4·7-in.*, 10 *12-pr.*, 10 *6-pr.*, 4 M.	3 (2 sub.)	21·5 *t*	1260	..
b.	Capitão Prat . . shd.	5981	328	60¾	21¾	12,000	La Seyne	1890	1893	391,000	12	3	4	..	10½	2	6 *9·4-in.* (Canet), 8 *4·7-in.* (Canet), 6 *2·2-in.*, 4 *1·8-in.*, 10 *1·4-in.*, 5 M.	4	18·3 *t*	775	485
a.c.	Esmeralda . . .	7020	436	53¼	22¼	16,000	Elswick .	1896	1897	..	6 H.S.	2	..	6 H.S.	4½ Shields	..	2 *8-in.*, 16 *6-in.*, 8 *12-pr.*, 2 *3-pr.*, 4 M.	3 (2 sub.)	22·8 *t*	1350	500

Cruising Ships, &c.

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						in.	in.			knots.	tons.	
to.g.b	Almirante Condell .	750	240	27½	10½	4500 B	Birkenhead .	1890	1892	..	..	..	3 *14-pr.*, 4 *3-pr.*, 2 M. .	5	21·0	210	..
,,	Almirante Lynch .																
,,	Almirante Simpson. .	812	240	27½	10½	4700 N.	Birkenhead .	1896	1896	..	..	4½	2 *4·7-in.*, 4 *3-pr.* . .	3	21·0*t*	200	..
cr.	Blanco Encalada . shd.	4400	370	46½	18½	14,500	Elswick . .	1893	1894	..	4–1¾	..	2 *8-in.*, 10 *6-in.*, 12 *3-pr.*, 10 *1-pr.**	5	22·78 *t*	†900	427
,,	Chacabuco . . shd	4500	360	46	18‡	15,750	Elswick . .	1901	1903	..	4½–1¾	..	2 *8-in.*, 10 *4·7-in.*, 16 *1·8-in.*, 2 M., 1 l.	5	23 0	1000 †	..
,,	General Baquedano (Training)	2330	240	45¾	18‡	1500 B.	Elswick . .	1898	1900	..	..	..	4 *4·7-in.*, 2 *12-pr.*, 2 *6-pr.*, 2 M., 1 l.	1	13·7 *t.*	200 300	302
,,	Ministro Zenteno . shd.	3600	330¼	43¾	16¾	6500	Elswick . .	1896	1898	..	..	..	8 *6-in.*, 10 *6-pr.*, 4 *1-pr.** .	3	20·0*t*	800	..
,,	Presidente Errázuriz shd.	2047	268	35¾	19½	5400	La Seyne .	1890	1892	..	3½	..	4 *6-in.* (Canet), 2 *5-in.*, 4 *2·2-in.*, 6 M.	3	19·0	200	171

* Armstrong. † Bunker capacity. ‡ Mean draught. **Two Gunboats of 145 tons displacement and one of 180 tons.**

CHINA.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						in.	in.			kts.	tons.	
cr.	**Foo-Ching**	2500	253	36¼	18	2400	..	1893	1895	..	4–2	4½	3 *5-in.* (K.), 4 M., 2 l.	..	16·0	..	..
to.g.b.	**Fei-Ying**	837	257¼	28½	12½	4500 Y.	Stettin	1895	1895	..	..	2	2 *4-in.*, 6 *3·4-in.*, 4 smaller	3	21·8 *t*	75	90
cr.	**Hai-Chi.**	4300	396	46¾	18½	17,000	Elswick	1898	1899	..	5	6	2 *8-in.*, 10 *4·7-in.*, 12 *3-pr.*, 4 *1·4-in.*, 6 M.	5	24·0	300	374
„	**Hai-Shen**	2903	314¾	41	16	8000	Vulcan . Stettin .	1898	1898	..	3	2	3 *6-in.* (K.), 8 *4-in.*, 6 *1·4-in.* Hotchkiss, 6 M.	3 (1 sub.)	20·7 *t*	220 500	244
„	**Hai-Shew**							1897	1898								
„	**Hai-Yung**							1897	1898								
„	**Hi-Ying**	2165	253	36¼	18	2400	..	1895	1897	..	..	..	2 *8-in.* (A.), 8 *4·7-in.*, 4 M.	1	21·0	..	..
to.cr.	**Kien-Wei**	861	256	26½	10½	7000 N.S.	Foochow	1900	1902	..	..	..	1 *3·9-in.*, 3 *2·5-in.*, 6 *1·4-in.*	2	22·5	360	300
„	**Kien-Gnan**						Foochow	1899	1902	..	..	..					
cr.	**King-Ching**	2100	250	36	20	2400	..	1886	1888	..	..	..	3 *7-in.* (K.), 7 *40-pr.*, 6 M.	2	14·5	360	300
to.g.b.	**Kwang-Ting**	1000	235	27½	11¼	3400	..	1890	1892	..	..	..	3 *4·7-in.*, 4 M., 2 l.	4	16·0	..	120
cr.	**Nan-Schuin**	2165	253	36¼	18	2400	Kiel	1884	1886	..	..	..	2 *8-in.* (A.), 8 *4·7-in.*, 9 M.	1	14·5	600	250
„	**Nan-Ting**	2165	253	36¼	18	2400	Kiel	1883	1885	..	..	..	2 *8-in.* (A.), 8 *4·7-in.*, 9 M.	1	15·0	600	250
g b.	**Tchu-Tai**	552	..	..	..	..	Kobe	1906	..	..	..	..	2 *4·7-in.*, 2 *12-pr.*	..	13·0	..	..

Torpedo-gunboat Pei-Ting (349 tons), four gunboats of 411 tons, two of 300 tons, four of 215 tons (defence of Canton Roads), training vessel Tung-Chi, 1700 tons—all launched 1885–88.

DENMARK.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
t.	**Helgoland.**	5263	257½	59¼	18¾	4000	Copenhagen	1878	1881	275,000	12–6	4	10	7	10	..	1 *12-in.* (K.), 4 *10·2-in.*, 5 *4·7-in.*, 10 M.	4	12·0	230	350
c.d.s., t.	**Herluf Trolle**	3415	271	50	16¼	4200 T.	Copenhagen	1899	1901	..	8–4 H.S	2	7 H.S.	..	6 H.S.	6 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 10 *2·2-in.*, 8 smaller.	3 (sub.)	16·0	250	250
b.	**Iver Hvitfeldt**	3208	242	49½	18	5100	Copenhagen	1886 1900	1889	200,000	12	2	..	9½	8	..	2 *10·2-in.* (K.), 10 *6-pr.*, 8 M.	4	15·6	250	298
c.d.s., t. *c.d.s., t.*	**Olfert Fischer** **Peder Skram**	3415	271	59	18¾	4200	Copenhagen	1903 Bldg.	1905 ..	..	8–4 K.S.	..	7 K.S.	..	6 K.S.	..	2 *9·4-in.*, 4 *5·9-in.*, 10 *2·2-in.*, 8 smaller.	3 (sub.)	16·0	250	250
c.d.s., t.	**Skjold**	2115	226½	38	13½	2200 T.	Copenhagen	1896	1899	..	9	2	..	7	8	4½	1 *9·4-in.*, 3 *4·7-in.* (K.), 4 *1·8-in.*, 1 M.	4	13·0	280	210
T. S.	**Tordenskjold**	2362	221½	43¼	15½	2600	Copenhagen	1880	1883	138,900	..	4–2	..	..	8 *comp.*	..	1 *14-in.* (K.), 4 *4·7-in.*, 8 M.	4	14·0	170	220

DENMARK.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.				tons.	
3rd cl. *cr.*	**Geiser**	1260	257½	27½	11¼	3000 T.	Copenhagen	1892	1893	..	1½	..	2 *4·7-in.*, 4 *3·4-in.*, 6 M.	4	17·1 *t*	125	155
„	**Heimdal**	1260	257½	27½	11¼	3000 T.	Copenhagen	1894	1896	..	1½	..	2 *4·7-in.*, 4 *3-pr.*, 6 M.	4	17·5	125	155
„	**Hekla**	1260	233	32¾	11¼	3000 T.	Copenhagen	1890	1893	..	1½	..	2 *6-in.*, 4 *2·2-in.*, 6 M.	4	17·0	125	155
cr.	**Valkyrien**	2854	268	43½	18	5300	Copenhagen	1887 1896	1890	..	2½	..	2 *8·2-in.* (K.), 6 *5·9-in.*, 4 Q.F., 10 M.	5	17·0	450	300

Gunboats.—Six (*Falster*, *Lille Belt*, *Öresund*, *Store Belt*, *Grönsund*, *Guldborgsund*), of 150 to 240 tons, 200 to 400 I.H.P. *Esbern Snare* (torpedo school-ship), 530 tons, 2-in. belt. *Hjaelperen* (mining), 280 tons. *Beskytteren*, torpedo transport, 389 tons, 600 I.H.P., B. & W. boilers, 3 1·8-in. Q.F., launched 1900.

FRANCE.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.*			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.g.b.	**Achéron** . .	1693	181	40¼	11¾	1700	Cherbourg.	1885 1900	1887	100,000	9½–6 *comp.*	2½	..	..	8 *comp.*	..	1 *10·8-in.*, 3 *3·9-in.*, 2 *1·8-in.*, 4 M.	..	13·0	100	101
a.c.	**Aube** (Amiral) .	9856	453	66¼	24½	22,155 *t* B.	St. Nazaire	1902	1904	973,440	6–4 H.S.	2	5–2 H.S.	..	7½ H.S.	6½–5 H.S.	2 *7·6-in.*, 8 *6·4-in.*, 6 *3·9-in.*, 20 small Q.F. and M.	2 (sub.)	21·9 *t*	970 1590	615
b.	**Baudin** (Amiral).	10,884	321½	69¾	26¼	8320	Brest .	1883 1899	1885	600,000	14–10	4	..	..	16½	4½	2 *14·5-in.*, 4 *6·4-in.*, 8 *5·5-in.*, and 17 *1·8-in.*	4	15·0	800	630
t.	**Bouvet** . .	12,007	401¼	70¼	27½	14,000 B.	Lorient .	1896	1898	1,100,770	15¾–8 H.S.	3½	4 H.S.	..	14½ H.S.	4 H.S.	2 *12-in.*, 2 *10·8-in.*, 8 *5·5-in.*, 8 *3·9-in.*, 19 small Q.F. and M.	2 (sub.)	18·2 *t*	621	621
t.	**Bouvines**	6691	293¾	58¼	23¼	8400 A'D.	La Seyne .	1892	1894	594,640	17¾	4	..	..	14½	..	2 *12-in.*, 8 *3·9-in.*, 4 *1·8-in.*, 10 *1·4*-in. M.	2	16·05 *t*	300	323
t.	**Brennus** .	11,190	361	67	26¼	14,000 B.	Lorient .	1891	1895	991,767	15¾ *comp.*	4	4¾ *comp.*	..	17¾ *comp.*	4¾ *comp.*	3 *13·4-in.*, 10 *6·4-in.*, 23 small Q.F. and M.	4	17·1 *t*	800	696
a.c.	**Bruix** .	4735	365¼	46	19¾	9049 B.	Rochefort .	1894	1896	409,622	3¾–2¾	2	3¾	..	3¾	3¾	2 *7·6-in.*, 6 *5·5-in.*, 4 *2·5-in.*, 4 *1·8-in.*, 4 *1·4-in.*, M.	4	18·3 *t*	406	391
t.	**Caïman** .	7050	278¼	59	24½	6000	Toulon .	1885 1892	1887	..	19½	3	..	..	10 H.S.	..	2 *10·8-in.*, 6 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*, 2 M.	2 (sub.)	14·5 *t*	400 800	332
t.	**Carnot** . .	11,954	382¼	70½	27¼	16,300 *t* D'A.	Toulon .	1894	1896	1,070,088	17¾–9 *comp.*	2¾	4	..	14½	4	2 *12-in.*, 2 *10·8-in.*, 8 *5·5-in.*, 4 *2·5-in.*, 16 *1·8-in.*, 10 *1·4-in*, and M.	2 (sub.)	17·86 *t*	705	625
a c.	**Chanzy** . .	4736	348	46	19¼	8300 B.	Bordeaux .	1894	1896	360,000	3¾–2¾	2	3¾	..	3¾	3¾	2 *7·6-in.*, 6 *5·5-in.*, 4 *2·5-in.*, 6 *1·8-in.*, 6 *1·4-in.*, M.	4	18·0	413	375
t.	**Charlemagne** .	11,108	385½	66½	27½	14,500 B.	Brest .	1895	1898	1,096,432	15¾ H.N.	3½	3 H.N.	..	15¾ H.N.	3 H.N.	4 *12-in.*, 10 *5·5-in.*, 8 *3·9-in.*, 16 *1·8-in.*, 10 *1·4-in.*, 8 M.	2 (sub.)	18·1 *t*	680 1100	631
t.	**Charles Martel**.	11,693	392½	71	27½	14,996 *t* D'A.	Brest .	1893	1897	1,092,830	17¾	3½	4	..	15¾	4	2 *12-in.*, 2 *10·8-in.*, 8 *5·5-in.*, 4 *2·5-in.*, 14 *1·8-in.*, 5 *1·4-in.*	2 (sub.)	18·1 *t*	677	632

* Orders have been given for the removal of all above water tubes in French battleships and 1st-class cruisers having submerged tubes, and they are here omitted

FRANCE.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
															Gun Position.						
											Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	* Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Charner** (Amiral)	4702	348	46	19¼	8300 B.	Rochefort	1893	1895	353,200	3¾–2¾	2	3¾	..	3¾	3¾	2 *7·6-in.*, 6 *6·5-in.* 14 small Q.F. and M.	4	18·2 *t*	413	375
a.c.	**Condé**	9856	453	63¾	24½	22,175 Nic.	Lorient	1902	1904	863,799	6–4 H.S.	2	5–2 H.S.	..	7½ H.S.	6½–5 H.S.	2 *7·6-in.*, 8 *6·4-in.*, 6 *3·9-in.*, 16 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	21·4 *t*	970 1590	615
t.	**Condorcet**	17,710	476	84	27	22,500 tur.	..	Pro.	..	2,000,824	10–8 K.S.	..	8¾	..	12 K.S.	8¾	4 *12 in.*, 12 *9·4-in.*, 16 *12 pr.*, 8 *3-pr.*	2 (sub.)	19·0	960 2010	681
a.b.&b.	**Courbet**	10,196	312	67	25	8100	Toulon	1881 1899	1884	800,000	15–9	2½	..	12	9½	4½ shield.	4 *13·3-in.*, 3 *9·4-in.*, 11 *5·5-in.*, 6 *1·8-in.*, 18 M.	4	15·4 *t*	1000	669
t.	**Danton**	17,710	476	84	27	22,500 tur.	Brest	Blg.	..	1,803,224	10–8 K.S.	..	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 16 *12-pr.*, 8 *3-pr.*	2 (sub.)	19·0	960 2010	681
t.	**Démocratie**	14,635	438¾	79½	27½	18,000	Brest	1904	..	1,473,180	11–7 H.S.	2¾	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 10 *7·6-in.*, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	18·0	905 1825	793
a.c.	**Desaix** shd.	7578	426½	58¼	24¼	17,715 *t* B.	St. Nazaire	1901	1903	762,759	4–3 H.S.	2¾	..	..	3½ H.S.	..	8 *6·4-in.*, 4 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*	2	21·7 *t*	880 1200	531
a.b.&b.	**Dévastation**	10,095	312	67	25	8320 B.	Lorient	1879 1901	1882	..	15–9	2½	..	12	9½	4½	4 *10·8-in.*, 2 *9·4-in.*, 14 *3·9-in.*, 26 smaller Q.F., 14 M.	2	15·17 *t*	950	685
t.	**Diderot**	17,710	476	84	27	22,500 tur.	..	Pro.	..	2,000,824	10–8 K.S.	..	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 16 *12-pr.*, 8 *3-pr.*	2 (sub.)	19·0	960 2010	681
a.c.	**DupetitThouars**	9367	452¾	63¾	24½	22,000 *t* B.	Toulon	1901	1905	831,839	6 H.S.	2	3¾ H.S.	6 H.S.	6 H.S.	3¾ H.S.	2 *7·6-in.*, 8 *6·4-in.*, 4 *3·9-in.*, 16 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	22·5 *t*	1020 1600	610
a.c.	**Dupleix** shd.	7578	426½	58¼	24¼	17,100 B.	Rochefort	1900	1903	652,354	4–3 H.S.	2¾	..	..	3½ H.S.	..	8 *6·4-in.*, 4 *8·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*	2	21·0	880 1200	531

a.c.	**Dupuy de Lôme**	6676	374	51½	26¾	14,000 N.S.	Brest .	1890	1893	416,000	4	2	4	..	4	4	2 *7·6-in.*, 6 *6·4-in.*, 12 *2·5-in.* and *1·8-in.*, 8 M.	4	20·0	900	515
a.c.	**Edgard Quinet**	13,780	515	70¼	27½	36,000 Guyot	Brest .	Bldg	..	1,307,536	6½–3½	2½	5-2	..	8	5½	14 *7·6-in.*, 12 *2·4-in.*, 12 smaller and M.	2 (sub.)	23·0	1242 2300	738
a.c.	**Ernest Renan** .	13,427	515	70½	26¾	36,000	St. Nazaire	1906	..	1,410,000	6¾–4 H.S.	2	5-3 H.S.	..	8 H.S.	5 H.S.	4 *7·6-in.*, 12 *6·4-in.* 21 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	23·0	1354 2300	674
b.	**Formidable**	. 10,878	321½	69½	26¼	9700	Lorient .	1885 1899	1888	467,520	14–10	3	..	..	16½	4½	2 *14·5-in.*, 4 *6·4-in.*, 8 *5·5-in.*, 17 *1·8-in.*	6	16·0	900	640
c.d.s.	**Furieux** .	. 5925	248	59	21¾	5033 B.	Cherbourg	1883 1904	1885	264,640	20–13 *comp.*	3½	..	..	9 K.S.	..	2 *9·4-in.*, 4 *3·9-in.*, 4 *2·5-in.*, 8 *1·8-in.*	2	14·3 *t*	290	248
t.	**Gaulois** .	. 11,105	385½	66½	27¼	14,500 B.	Brest .	1896	1898	1,093,925	15¾ H.N.	3½–1½	3 H.N.	..	15¾ H.N.	3 H.N	4 *12-in.*, 10 *5·5-in.*, 8 *3·9-in.*, 16 *1·8-in.*, 10 *1·4-in.*, 8 M.	2 (sub.)	18·0	680 1100	632
a.c.	**Gloire** .	. 9856	453	63¾	24½	20,500 Nic.	Lorient .	1900	1904	883,269	6–4 H.S.	2	5-2 H.S.	..	7½ H.S.	6½–5 H.S.	2 *7·6-in.*, 8 *6·4-in.*, 6 *3·9-in.*, 16 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	21·0	970 1590	615
a.c.	**Gueydon** . (Amiral)	. 9367	459	63¾	24½	20,200 Nic.	Lorient .	1899	1902	817,994	6–3¾ H.S.	2	3¾ H.S	6 H.S.	6 H.S.	3¾ H.S.	2 *7·6-in.*, 8 *6·4-in.*, 4 *3·9-in.*, 16 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	21·0	1020 1600	610
t.	**Henri IV.**	. 8807	354½	72	23	11,500 Nic.	Cherbourg.	1899	1903	801,248	11–7 H.S.	3	4¾ H.S.	..	11¾ H.S.	5 H.S.	2 *10·8-in.*, 7 *5·5-in.*, 12 *1·8-in.*, 2 M.	2 (sub.)	17·2 *t*	735 1100	464
t. & b.	**Hoche** .	. 10,581	333	65½	27¼	11,300 B.	Lorient .	1886 1900	1889	700,000	18–14 *comp.*	3	3	..	16 *comp.*	..	2 *13·4-in.*, 2 *10·8-in.*, 12 *5·5-in.*, 4 *2·5-in.*, 9 *1·8-in.*, 12 *1·4-in.*, 8 M.	5	16·0	800	660
t.	**Iéna**† .	. 11,861	400¾	68¼	27½	16,500 *t* B.	Brest .	1898	1901	1,111,340	13¾ 6 H.S.	2½	5–4 H.S.	..	..	4 H.S.	4 *12-in.*, 8 *6·4-in.*, 8 *3·9-in.*, 16 *1·8-in.*, 5 *1·4-in.*, 13 *1·4-in.* M.	2 (sub.)	18·2 *t*	820 1100	631
t.	**Indomptable** .	7105	279¾	59	23½	6605 Nic.	Lorient .	1883 1902	1886	..	19½ *comp.*	3	..	..	10 H.S.	..	2 *10·8-in.*, 6 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*, 2 M.	4	14·8 *t*	400 800	332
t.	**Jauréguiberry** .	11,637	364	72¾	27¾	15,800 D'A.	La Seyne .	1893	1896	1,069,536	17¾	2¾	4	..	14½	4	2 *12-in.*, 2 *10·8-in.*, 8 *5·5-in.*, 4 *2·5-in.*, 12 *1·8-in.*, 8 *1·4-in.*, 8 M.	2 (sub.)	18·07 *t*	700	625
a.c.	**Jeanne d'Arc** .	11,092	477¼	63¾	26½	28,000 Guyot	Toulon .	1899	1903	875,847	6–3 H.S.	2·2	3 H.S.	..	6 H.S.	5 H.S.	2 *7·6-in.*, 14 *5·5-in.*, 16 *1·8-in.*, 8 *1·4-in.*, 2 M.	2 (sub.)	21·7 *t*	1400 2000	626
c.d.s.	**Jemmapes**	. 6474	284	57¾	22	9250 D'A.	St. Nazaire	1892	1894	525,000	17¾–10	4–2¾	..	..	17¾	..	2 *13·4-in.*, 4 *3·9-in.*, 4 *1·8-in.*, 10 *1·4-in.*, M.	2	16·7 *t*	300	334
a.c.	**Jules Ferry**	. 12,351	480½	70¼	27	28,753 Guyot	Cherbourg	1903	1906	1,169,940	6¾–4 H.S.	2	5–3 H.S.	6	6 H.S.	5 H.S.	4 *7·6-in.*, 16 *6·4-in.*, 22 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	22·8 *t*	1320 2100	728

* Orders have been given for the removal of all above water tubes in French battleships and 1st-class cruisers having submerged tubes, and they are here omitted..

† Seriously damaged by explosion, March, 1907.

FRANCE.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	• Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			kts.	tons.	
a.c.	**Jules Michelet.**	12,370	480½	70¼	27	29,000 Guyot	Lorient	1905	..	1,204,107	6–4 K.S.	2	5–3 K.S.	6 H.S.	8 K.S.	5 K.S.	4 *7·6-in.*, 12 *6·4-in.*, 24 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	23·0	1320 2100	724
t.	**Justice**	14,635	438¾	79½	27½	18,000 Nic.	La Seyne	1904	..	1,670,385	11–7 H.S.	2¾	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 10 *7·6-in.*, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	18·0	905 1825	793
a.c.	**Kléber** shd.	7578	426½	58¼	24¼	18,000 Nic.	Bordeaux	1902	190[illegible]	770,320	4–3 H.S.	2¾	..	..	3½ H.S.	..	8 *6·4-in.*, 4 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*	2	21·2 *t*	880 1200	531
a.c.	**Latouche - Tréville**	4681	348	46	19¼	8300 B.	Havre	1892	1893	360,000	3¾–2¾	2	3¾	..	3¾	3¾	2 *7·6-in.*, 6 *5·5-in.*, 4 *2·5-in.*, 4 *1·8-in.*, 6 *1·4-in.*, M.	4	18·2 *t*	406	375
a.c.	**Léon Gambetta**	12,351	480½	70¼	27	27,500 Nic.	Brest	1901	1904	1,169,940	6¾–4 H.S.	2	5–3 H.S.	6	8 H.S.	5 H.S.	4 *7·6-in.*, 16 *6·4-in.*, 22 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	22·0	1320 2100	728
t.	**Liberté**	14,635	434¾	79½	27½	18,000 B.	St. Nazaire	1905	..	1,652,436	11 H.S.	..	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 10 *7·6-in.*, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	18·0	905 1825	793
b.	**Magenta**	10,680	330	65½	27¼	12,000	Toulon	1890 1901	1893	760,960	18–12	3	..	..	16	2 screen.	4 *13·4-in.*, 14 *5·5-in.*, 4 *2·5-in.*, 12 *1·8-in.*, 8 M.	3	16·25 *t*	800	660
b.	**Marceau**	10,558	330	65½	27¼	14,000 Nic.	La Seyne	1887 1901	1890	769,080	18	3	..	..	16	2 screen.	4 *13·4-in.*, 17 *5·5-in.*, 4 *2·5-in.*, 12 *1·8-in.*, 8 M.	6	16·4 *t*	800	660
a.c.	**Marseillaise**	9856	453	63¾	24½	20,500 B.	Brest	1900	1903	881,270	6–4 H.S.	2	5–2 H.S.	..	7½ H.S.	6½–5 H.S.	2 *7·6-in.*, 8 *6·4-in.*, 6 *3·9-in.*, 2 *2·5-in.*, 18 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	21·0	970 1590	615
t.	**Masséna**	11,735	384¾	66	27	13,500 D'A.	St. Nazaire	1895	1898	1,100,400	17¾–9¾	3½	4 H.S.	16	15¾15¾ H. S.	4	2 *12-in.*, 2 *10·8-in.*, 8 *5·5-in.*, 8 *3·9-in.*, 12 *1·8-in.*, 12 *1·4-in.*	2 (sub.)	17·1 *t*	630	642
t.	**Mirabeau** shd.	17,710	476	84	27	22,500 tur.	Lorient	Bldg.	..	1,803,224	10–8 K.S.	..	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 16 *12-pr.*, 8 *3-pr.*	2 (sub.)	19·0	960 2010	681
a.c.	**Montcalm**	9367	452¾	63¾	24½	19,600 N.S.	La Seyne	1900	1902	902,809	6 H.S.	2	3¾ H.S.	6 H.S.	6 H.S.	2¾ H.S.	2 *7·6-in.*, 8 *6·4-in.*, 4 *3·9-in.*, 16 *1·8-in.*, 6 *1·4-in.*	2 (sub.)	21·0	1020 1600	612
b.	**Neptune**	10,810	330	65½	27¼	12,000 B.	Brest	1887	1892	780,000	18	3	..	..	16	2 screen.	4 *13·4-in.*, 16 *5·5-in.*, 4 *2·5-in.*, 12 *1·8-in.*, 8 M.	5	16·02 *t*	800	660

t.	**Patrie** .	. 14,635	438¾	79½	27½	17,859 *t* Nic.	La Seyne .	1903	1906	1,674,870	11–7 H.S.	2¾	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 18 *6·4-in.*, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	19·12 *t*	905 1825	793
a.g.b.	**Phlégéton** .	1767	187	40¼	11¾	1700	Cherbourg	1890	1892	142,000	9–6 *comp.*	2	..	..	8 *comp.*	..	1 *10·8-in.*, 1 *5·5-in.*, 4 *1·8-in.*, 4 M.		12·4 *t*	72	101
a.c.	**Pothuau** .	. 5374	370½	50¼	21	10,398 B.	Havre .	1895	1896	384,000	3½–2	3⅜	2½	..	9½	5½	2 *7·6-in.*, 10 *5·5-in.*, 16 *1·8-in.*, 8 *1·4-in.*	4	19·2 *t*	538	461
t	**République**	. 14,635	438¾	79½	27½	19,626 *t* N.	Brest .	1902	1906	1,523,136	11–7 H.S.	2¾	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 18 *6·4-in*,, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	19·15	905 1825	793
b.	**Requin** .	. 7078	279¾	59	24½	7000 Nic.	Bordeaux .	1885 1902	1888	..	19½ *comp.*	3	..	..	10 H.S	..	2 *10·8-in.*, 6 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*, 12 M.	4	15·0	400 800	332
t.	**Saint Louis**	11,090	385½	66½	27½	14,500 B.	Lorient .	1896	1900	1,080,997	15¾ H.N.	3½	3 H.N.	..	3–15¾ H.N.	3 H.N.	4 *12-in.*, 10 *5·5-in.*, 8 *3·9-in.*, 16 *1·8-in.*, 10 *1·4-in.*, 8 M.	2 (sub.)	18·0 ·	820 1150	631
a.g.b.	**Styx** . .	. 1767	187	40¼	11¾	1700	Cherbourg	1892	1893	142,000	9–6 *comp.*	2	..	..	8 *comp.*	..	1 *10·8-in.*, 1 *5·5-in.*, 4 *1·8-in.*, 4 M.	..	13·0	72	101
t.	**Suffren** .	. 12,527	411¾	70¼	27½	16,500 Nic.	Brest .	1899	1903	1,195,564	12–8 H.S.	2¾	5–3 H.S.	..	12 H.S.	6–5 H.S.	4 *12-in.*, 10 *6·4-in.*, 8 *3·9-in.*, 20 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	18·0	1100 1820	615
b.	**Terrible** .	. 7206	279¾	59	24½	6230	Brest .	1881 1902	1884	..	19½ *comp.*	3	..	..	10 H.S.	..	2 *13·4-in.*, 6 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.*	4	14·5 *t*	400 800	332
t.	**Tréhouart**	. 6671	293¼	58¼	23¼	8500 B.	Lorient .	1893	1896	593,100	17¾	4	..	..	14½	..	2 *12-in.*, 8 *3·9-in*, 4 *1·8-in.*, 4 *1·4-in.*, 8 M.	2	15·76 *t*	300	337
c.d.s.	**Valmy** .	. 6477	293¾	57¼	23½	8954	St. Nazaire	1892	1895	578,957	17¾	4	..	..	17¾	..	2 *13·4-in.*, 4 *3·9-in.*, 4 *1·8-in.*, 10 M.	2	16·7 *t*	300	297
t.	**Vergniaud**	. 17,710	476	84	27	22,500 tur.	Bordeaux .	Bldg.	..	2,000,824	10–8 K.S	..	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 16 *12-pr.*, 8 *3-pr.*	2 (sub)	19·0	960 2010	681
t.	**Vérité** .	. 14,635	438¾	79½	27½	18,000 B.	Bordeaux .	1905	..	1,661,409	11–7 H.S.	2¾	8 H.S.	..	12 H.S.	6 H.S.	4 *12-in.*, 10 *7·6-in.*, 26 *1·8-in.*, 2 *1·4-in.*	2 (sub.)	18·0	905 1825	822
a.c.	**Victor Hugo**	. 12,351	480½	70¼	27	27,500 B.	Lorient .	1904	1906	1,229,932	6¾–4 H S.	2	5–3 H.S.	6	8 H.S.	5 H.S.	4 *7·6-in.*, 16 *6·4-in.*, 22 *1·8-*, 2 *1·4-in.*	2 (sub.)	22·0	1320 2100	728
t	**Voltaire** .	. 17,710	476	84	27	22,500 tur.	La Seyne .	Bldg.	..	2,000,824	10–8 K.S.	..	8¾	..	12 K.S.	8¾	4 *12-in.*, 12 *9·4-in.*, 16 *12-pr.*, 8 *3-pr.*	2 (sub.)	19·0	960 2010	681
a.c.	**Waldeck-Rousseau**	. 13,780	515	70¼	27½	36,000 Guyot	Lorient .	Bldg.	..	1,301,380	6½–3½	2½	5	..	8	5½	14 *7·6-in.*, 14 *2·4-in.*, 10 smaller.	2 (sub.)	23·0	1242 2300	738

• Orders have been given for the removal of all above water tubes in French battleships and 1st-class cruisers having submerged tubes, and they are here omitted.

FRANCE.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
3rd cl. *cr.*	**Alger** . . .	4313	346	45¼	19½	8254 B.	Cherbourg .	1889	1893	280,000	3½	..	4 *6·4-in.*, 6 *5·5-in.*, 10 smaller, 10 M.	5	19·61 *t*	860	325
to. g. b. .	**Bombe** . . .	413	196¾	21½	5¾	2000 D'A.	Havre . .	1885	1886	..	..	..	4 *1·8-in.*, 3 M. . . .	2	18·0	100	63
to. g. b. .	**Casabianca** . .	974	262½	26¾	11½	5200 D'A.	Bordeaux .	1895	1896	98,985	½	..	1 *3·9-in.*, 3 *2·5-in.*, 5 *1·8-in.*, 4 *1·4-in.*	2	22·0	116	143
3rd cl. *cr.*	**Cassard** . . .	3890	325½	45	20½	10,143 D'A.	Cherbourg .	1896	1898	318,712	3	2 shield	6 *6·4-in.*, 4 *3·9-in.*, 10 *1·8-in.*, 3 *1·4-in.*, 2 M.	2	19 8 *t*	630	385
to. g. b. .	**Cassini** . . .	966	262½	27¼	11½	5500 D'A.	Bordeaux .	1894	1894	98,500	½	..	1 *3·9-in.*, 3 *2·5-in.*, 4 *1·4-in.*	2	21·2 *t*	110	118
3rd cl. *cr.*	**Catinat** . . shd.	4048	331¾	44½	21	9000 B.	Havre . .	1896	1897	324,992	3	2 shield	4 *6·4-in.*, 10 *3·9-in.*, 10 *1·8-in.*, 4 *1·4-in.* M.	2	19·0	563	384
2nd cl. *cr.*	**Cécille** . . .	5839	378¾	49¼	19¾	10,200	La Seyne .	1888	1890	299,666	4	..	8 *6·4-in.*, 10 *5·5-in.*, 6 *1·8-in.*, 14 M.	4	19·0	940	486
3rd cl. *cr.*	**Chasseloup-Laubat**	3824	308½	43½	20¾	9000 D'A.	Cherbourg .	1893	1894	256,320	3	..	6 *6·4-in.*, 4 *3·9-in.*, 8 *1·8-in.*, 12 *1·4-in.*, M.	2	19·25 *t*	587	358
2nd cl. *cr.*	**Châteaurenault** shd.	7898	442¾	55¾	24½	24,300 *t* N.S.	La Seyne .	1898	1902	606,656	2½	2 shield	2 *6·4-in.*, 6 *5·5-in.*, 10 *1·8-in.*	2	24·19 *t*	1400 2100	625
to. cr. .	**Condor** . . .	1229	216½	29¼	15¼	3800	Rochefort .	1885 1896	1886	80,000	1½	..	5 *3·9-in.*, 8 *1·8-in.*, 6 M. .	4	17·7 *t*	160	134
3rd cl. *cr.*	**Cosmao** . . .	1923	312	30½	14	6000	Bordeaux .	1888	1890	133,000	1½	..	4 *5·5-in.*, 8 other Q.F., 4 M.	4	20·5 *t*	200	190
to. g. b. .	**Couleuvrine** . .	369	196¾	21½	6	2047	Havre . .	1885	1886	33,778	..	..	4 *1·8-in.*, 3 M. . . .	2	18·0	100	63

3rd cl. *cr.*	**D'Assas**	3962	325½	45	20½	9500 D'A.	St. Nazaire	1896	1898	292,682	3	2 shield	6 *6·4-in.*, 4 *3·9-in.*, 10 *1·8-in.*, 11 *1·4-in.*	2	19·25 *t*	630	393
3rd cl. *cr.*	**Davout**	3031	295¼	40	17½	9000 Nic.	Toulon	1890	1902	221,827	3	..	6 *6·4-in.*, 4 *3·9-in.*, 4 *2·5-in.*, 4 *1·8-in.*, 6 M.	4	20·07 *t*	600	336
g. v.	**Décidée**	635	184¾	26¼	12¼	1000 Nic.	Lorient	1899	1900	54,100	..	..	2 *3·9-in.*, 4 *2·5-in.*, 4 *1·4-in.*	..	13·0	99	99
2nd cl. *cr.*	**D'Entrecasteaux** shd.	7995	383½	58½	25¾	13,500	La Seyne	1896	1898	667,740	4	10–3 H.S.	2 *9·4-in.*, 12 *5·5-in.*, 12 *1·8-in.*	6	19·2 *t*	650	521
3rd cl. *cr.*	**Descartes** shd.	3970	326	42¼	21¾	9000 B.	St. Nazaire	1894	1896	334,725	1½	..	4 *6·4-in.*, 10 *3·7-in.*, 8 *1·8-in.*, 4 *1·4-in.*	2	21·0 *t*	552	386
3rd cl. *cr.*	**D'Estrées** shd.	2421	311¾	39¼	17¾	8500 Nor.	Rochefort	1897	1900	208,200	1½	..	2 *5·5-in.*, 4 *3·9-in.*, 8 *1·8-in.*, 2 *1·4-in.*	..	20·5 *t*	345 480	234
to. g. b.	**D'Iberville**	952	262½	27	11¼	5060 D'A.	St. Nazaire	1893	1894	99,120	½	..	1 *3·9-in.*, 1 *2·5-in.*, 4 *1·4-in*	6	21·4 *t*	117	118
to. g. b.	**Dragonne**	403	196¾	21½	6	2000	Havre	1885	1886	36,074	..	..	4 *5·5-in.*, 3 M.	2	18·0	100	63
3rd cl. *cr.*	**Du Chayla** shd.	3890	325½	45	20½	10,009 D'A.	Cherbourg	1895	1897	315,835	3	2 shield	6 *6·4-in.*, 4 *3·9-in.*, 10 *1·8-in.*, 3 *1·4-in.*, 2 M.	2	20·2 *t*	624	385
to. g. b.	**Dunois**	889	256	27¾	12¾	7000 N.S.	Cherbourg	1897	1898	123,383	..	..	6 *2·5-in.*, 6 *1·8-in.*	..	23·0	137	128
to. cr.	**Epervier**	1268	216½	29¼	15½	3200	Rochefort	1885	1887	80,000	1½	..	5 *3·9-in.*, 1 *2·5-in.*, 6 M.	4	17·6 *t*	160	134
to. cr.	**Faucon**	1311	216½	29¼	15½	3200	Toulon	1887	1888	80,000	1½	..	5 *3·9-in.*, 1 *2·5-in.*, 6 M.	4	18·0	150	134
to. g. b.	**Flèche**	418	196¾	21½	6	200	Havre	1885	1886	37,517	..	..	4 *1·8-in.*, 3 M.	2	18·0	100	63
3rd cl. *cr.*	**Fleurus**	1289	229¾	29¼	15¼	4000 Nic.	Cherbourg	1893	1898	128,530	..	..	5 *3·9-in.*, 6 *1·8-in.*, 4 M.	4	17·6 *t*	118	179
3rd cl. *cr.*	**Forbin**	1935	312	30½	16	5700	Rochefort	1888	1890	123,739	1½	..	4 *5·5-in.*, 8 other Q.F., 4 M.	4	20·6	200	190
T.D.S.	**Foudre**	5984	370½	52½	23½	11,900 *t* D'A.	Bordeaux	1895	1897	407,712	3½	..	8 *3·9-in.*, 4 *2·5-in.*, 4 *1·4-in.*	4	19·9 *t*	840	410
3rd cl. *cr.*	**Friant**	3882	308½	43½	20¾	9000 Nic.	Brest	1893	1894	308,750	3	..	6 *6·4-in.*, 4 *3·9-in.*, 8 *1·8-in.*, 6 *1·4-in.*	2	18·19	587	358

FRANCE.—Cruising Ships, &c.—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
3rd cl. *cr.*	**Galilée** . . .	2318	330¼	34½	17¾	6600 B.	Rochefort .	1896	1897	208,152	1½	2 shield	4 *5·5-in.*, 2 *3·9-in.*, 8 *1·8-in.*, 8 *1·4-in.*	2	20·0	226	**248**
2nd cl. *cr.*	**Guichen** . . shd.	8151	436¼	54¾	24½	24,000 D'A.	St. Nazaire .	1897	1902	611,945	2½	2 shield	2 *6·4-in.*, 6 *5·5-in.*, 10 *1·8-in.*	2	23·0	1460	**625**
3rd cl. *cr.*	**Infernet** . . shd.	2435	311¾	39¼	15½	8500 Nor.	Bordeaux .	1899	1900	193,000	1½	..	2 *5·5-in.*, 4 *3·9-in.*, 8 *1·8-in.*	2	20·5	345 480	**234**
3rd cl. *cr.*	**Isly**	4406	346	43½	19½	8100	Brest . .	1891	1892	252,760	3	..	4 *6·4-in.*, 6 *5·5-in.*, 14 *2·5-in.* and *1·8-in.*, 8 M.	3	18·3	880	**332**
2nd cl. *cr.*	**Jurien de la Gravière** shd.	5595	440	48¾	22	17,000 Guyot	Lorient . .	1899	1901	475,979	3	..	8 *6·4-in.*, 12 *1·8-in.* . .	2	22·9 *t*	600 900	**511**
3rd cl. *cr.*	**Jean Bart*** . .	4044	346	43½	19½	10,000 Nic.	Rochefort .	1889	1891	283,240	4	.	4 *6·4-in.*, 6 *5·5-in.*, 14 *2·5-in.* and *1·8-in.*, 8 M.	3	19·0	940	**332**
g. v. .	**Kersaint** . . shd.	1223	226	34½	15	2200	Rochefort .	1897	1898	107,933	..	..	1 *5·5-in.*, 5 *3·9-in.*, 7 *1·4-in.*	..	15·0	199	**110**
to. g. b.	**La Hire** . . .	889	256	27¾	12¾	7000 N.S.	Cherbourg	1898	1899	123,383	..	..	6 *2·5-in.*, 6 *1·8-in.* . .	..	23·0	137	**128**
3rd cl. *cr.*	**Lalande** . . .	1968	311½	31¼	14	6000	Bordeaux .	1888	1900	133,800	1½	..	4 *5·5-in.*, 8 other Q.F., 4 M.	4	22·0	200	**190**
to. g. b.	**Lance** . . .	395	196¾	21½	5¾	2000 Du T.	Havre . .	1886	1887	39,964	..	..	4 *1·8-in.*, 3 M. . .	2	18·0	100	**63**
3rd cl. *cr.*	**Lavoisier** . .	2285	330¼	34½	17¾	6400 B.	Rochefort .	1897	1899	202,024	1½	2 shield	4 *5·5-in.*, 2 *3·9-in.*, 8 *1·8-in.*, 2 *1·4-in.*, 4 M.	2	20·0	226	**248**

to. g. b.	**Léger** . . .		509	197	23	10½	2360 B.	Lorient .	1891	1892	52,000	..	..	1 *3·9-in.*, 3 *2·5-in.*, 4 *1·4-in.*	3	18·8 *t*	130	69
to. g. b.	**Lévrier** . . .		497	197	23	10½	2240 B.	Lorient .	1891	1892	52,000	..	..	1 *3·9-in.*, 3 *2·5-in.*, 4 *1·4-in.*	3	18·5 *t*	130	69
3rd cl. *cr.*	**Linois** . . .		2308	321½	34½	17½	6600	La Seyne .	1894	1895	163,014	1½	3·9 shield	4 *5·5-in.*, 2 *3·9-in.*, 8 *1·8-in.*, 4 *1·4-in.*, 4 M.	4	20·5 *t*	200	248
3rd cl. *cr.*	**Pascal** . . .		3951	326	42¼	21½	9000 *t* B.	Toulon .	1895	1897	322,321	1½	..	4 *6·4-in.*, 10 *3·9-in.*, 8 *1·8-in.*, 4 *1·4-in.*, M.	2	20·0 *t*	650	378
3rd cl. *cr.*	**Protet** . .	shd.	4001	331¾	44¾	21	9300	Bordeaux .	1898	1900	324,992	2½	2 shield	4 *6·4-in.*, 10 *3·9-in.*, 10 *1·8-in.*, 2 *1·4-in.*	2	20·2 *t*	563	384
to. g. b.	**Sainte Barbe** . .		430	196¾	21½	6	2000	Rouen .	1885	1886	43,233	1½	..	4 *1·8-in.*, 3 M. . .	2	18·0	100	63
3rd cl. *cr.*	**Surcouf** . . .		2012	312	30½	14	6000	Cherbourg .	1888	1900	131,200	1½	..	4 *5·5-in.*, 8 other Q.F., 4 M.	4	20·5 *t*	200	190
g. v. .	**Surprise** . .		617	184¾	24½	12¼	853 *t*	Havre .	1895	1896	50,954	..	..	2 *3·9-in.*, 4 *2·5-in.*, 4 *1·4-in.*	..	13·4 *t*	73	99
3rd cl. *cr.*	**Troude** . . .		1994	311½	31¼	14	6000	Bordeaux .	1888	1900	33,383	1½	..	4 *5·5-in.*, 8 smaller, 4 M. .	4	20·9 *t*	200	190
to. g. b.	**Vautour** . .		1266	216½	29¼	15½	3391	Toulon .	1886	1888	87,733	1½	..	5 *3·9-in.*, 1 *2·5-in.*, 6 M.	4	17·3 *t*	150	134
to. g. b.	**Wattignies** . .		1272	230	29¼	15	4189	Rochefort .	1891	1892	111,000	..	..	5 *3·9-in.*, 6 *1·8-in.*, 7 *1·4-in.*, M.	4	18·61 *t*	160	180
g. v. .	**Zélée** . . .		554	185½	26	10½	1000 Nic.	Rochefort .	1899	1900	..	..	..	2 *3·9-in.*, 4 *2·5-in.*, 4 *1·4-in.*	..	13·0	80	75

* Wrecked on the West Coast of Africa and abandoned.

Gun vessel Fulton (899 tons); gunboats Comète, Lion. Shallow-draught gunboats Argus and Vigilante, launched at Chiswick 1900:—displacement, 122 tons; 13 knots.

Merchant Cruisers (Auxiliary to French Navy).

To what Company belonging.	Name.	Register Tonnage.	Length.	Beam.	Depth.	Speed.	When built.
		Tons.	Feet.	Feet.	Feet.	Knots.	
Compagnie Générale Transatlantique	La Provence	15,000	—	—	—	22	1905
	La Lorraine	11,869	563·1	60·0	35·9	20	1900
	La Savoie	11,200	563·1	60·0	35·9	20	1900
	L'Aquitaine	8810	500·0	57·3	34·0	19	1890
	La Touraine	9047	520·2	56·0	34·6	19	1890
	Duc de Bragance	2096	334·6	34·2	16·8	17½	1889
	Eugène Pereire	2078	334·6	35·1	23·9	17½	1888
	Général Chanzy	2299	341·2	35·7	15·5	17½	1891
	La Bretagne	7112	495·4	51·8	34·5	17½	1886
	La Champagne	7087	493·4	51·8	34·5	17½	1885
	La Gascogne	7395	495·4	52·2	34·8	17½	1886
	Maréchal Bugeaud	2206	342·5	34·1	23·0	17½	1890
	Ville d'Alger	2211	342·7	36·1	23·0	17½	1890
	La Navarre	6648	471·0	50·5	36·4	17	1892
	La Normandie	6283	459·3	49·2	34·1	16	1882
	Ville de Tunis	1966	317·3	34·6	16·8	15½	1884
	Moïse	1873	310·0	33·5	16·7	15	1880
	St. Augustin	1854	314·0	33·8	16·5	15	1880
	Versailles	4336	373·7	45·3	27·0	..	1882
	Ville de Madrid	1874	308·7	33·5	16·7	15	1880
	Ville de Naples	1879	311·6	34·1	16·7	15	1881
Messageries Maritimes	Armand Béhic	6635	486·6	50·1	36·8	17½	1892
	Australien	6570	482·3	49·2	34·1	17½	1889
	Polynésien	6569	482·3	49·2	34·1	17½	1890
	Ville de la Ciotat	6631	485·8	49·9	36·8	17½	1892
	Annam	6344	446·2	50·9	36·1	17½	1898
	Atlantique	6708	468·9	50·6	32·8	17½	1899
	Tonkin	6364	446·2	50·9	36·1	17½	1898
	Ernest Simons	4562	442·9	47·1	36·7	..	1893
	Indus	6357	446·2	50·8	36·1	..	1897
	Brésil	5876	463·9	46·4	32·5	16½	1889
	Chili	6875	462·6	47·6	36·7	..	1894
	Cordillère	6379	462·6	47·6	36·1	..	1895
	La Plata	5807	462·6	45·9	32·5	16½	1889

NOTE.—The armament for the larger ships is 7 5·5-in. and smaller quick-firers.

GERMANY.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
															Gun Position.						
											Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c. d. s.	**Aegir**	4084	267	49¼	17¾	4800 T.	Kiel (Danzig)	1895 1903	1897	233,500	9½ H.S.	2	..	..	8¾ H.S.	..	3 *9·4-in.*, 10 *3·4-in.*, 6 M.	4 (1 sub.)	14·8 *t*	225 †	276
b.	**Baden**	7252	321½	60	15½	6200 Dürr.	Kiel	1880 1897	1884	444,886	16	2¾	10	..	10	..	6 *10·2-in.*, 8 *3·4-in.*, 8 *1·4-in.*, 1 l., 6 M.	5 (2 sub.)	14·0	700	376
b.	**Baden** (Ersatz) **	..	..	..	..	..	Bremen	Pro.	..	1,825,000	..	..	..	..	..	..	..	..	..	..	..
b.	**Bayern**	7252	321½	60	19½	6326 Dürr.	Kiel	1878 1896	1882	406,660	16	3	10	..	10	..	6 *10·2-in.*, 8 *3·4-in.*, 8 *1·4-in.*, 1 l., 6 M.	5 (2 sub.)	14·0	700	376
b.	**Bayern** (Ersatz)*	18,000	..	..	..	..	Wilhelmshaven	Bldg.	..	1,825,000	..	..	..	..	..	..	..	..	19·5	..	860
c. d. s.	**Beowulf**	4049	267	49¼	17¾	4800 T.S.	Bremen	1890 1902	1893	175,000	9½	1¼	..	..	8	..	3 *9·4-in.*, 10 *3·4-in.*, 7 M.	4	15·0	580 †	297
b.	**Brandenburg**	9874	354¼	65	24½	9640	Stettin (Vulcan)	1891	1893	606,500§	15¾ *comp.*	2½	..	..	11¾ *comp.*	1½	6 *11-in.*, 8 *4·1-in.*, 8 *3·4-in.*, 12 *1·4-in.*, 8 M., 2 l.	3	16·5 *t*	680 800	552
b.	**Braunschweig**	12,997	398½	73½	24½	16,000 T. S. & C.	Germania	1902	1904	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *6·7-in.*, 12 *3·4-in.*, 12 *1·4-in.*, 8 M.	6 (sub.)	18·0	700 1600‡	660
b.	**Deutschland**	13,200	398½	72¾	24½	16,939 T. S.&C.	Germania	1904	1906	1,214,000	9½–4 K.S.	3	8 K.S.	6 K.S.	10–6 K.S.	6¾ K.S.	4 *11-in.*, 14 *6·7-in.*, 22 *3·4-in.*, 4 *1·4-in.*, 4 M.	6 (sub.)	18·5 *t*	700 1800†	736
a. c.	**E***	14,760	..	..	..	..	Kiel	Bldg	..	..	..	..	..	..	..	..	..	..	..	..	..
b.	**Elsass**	12,997	398½	72¾	24½	16,812 W.T.& C.	Danzig (Schichau)	1903	1905	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *6·7-in.*, 12 *3·4-in.*, 12 *1·4-in.*, 8 M.	6 (5 sub.)	18·7	800 1600†	660
a. c.	**F****	..	..	..	..	..	.. (turbines)	Pro.	..	1,800,000	..	..	..	..	..	..	..	..	..	..	..
a. c.	**Friedrich Karl**	8858	393½	65½	24	18,500 Dürr.	Hamburg	1902	1904	875,000	4 K.S	2	6 K.S.	4 K.S.	6 K.S.	4 K.S.	4 *8·2-in.*, 10 *5·9-in.*, 12 *3·4-in.*, 14 *1·4-in.*, 4 M.	4 (3sub.)	20·5 *t*	950 1500†	504
c. d. s.	**Frithjof**	4049	267	49¼	17¾	4800 T. S.	Bremen	1891	1892	175,000	9¼ H. S.	1¼	..	..	7¾ H. S.	4 K.S.	3 *9·4-in.*, 8 *3·4-in.*, 6 M.	4	14·8	225	276
a. c.	**Fürst Bismarck**	10,570	393½	66½	26	14,000 Dürr.	Kiel	1897	1900	..	7¾ K. S.	3	..	..	7¾ K. S.	..	4 *9·4-in.*, 12 *5·9-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 8 M.	6 (5 sub.)	19·0	1000§	565
a. c.	**Gneisenau**	11,420	449½	70¾	24½	26,000 T.S.	Bremen (Weser)	1906	..	..	6–3 K.S.	2	6–4¾	..	6¾	..	8 *8·2-in.*, 6 *6-in.*, 20 *3·4-in.*, 14 *smaller.*	4	22·5	800§ 2000	650

Estimates, 1906.

** Estimates, 1907; particulars not disclosed.

† Also liquid fuel.

‡ And 200 tons "tar oil."

§ Exclusive of armament.

GERMANY.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			kts.	tons.	
c. d. s.	**Hagen**	4049	267	49¼	17¾	5250 T.	Kiel.	1893 1900	1895	..	7 K. S.	1¼	..	..	7¾ H. S.	..	3 *9·4-in.*, 10 *3·4-in.*, 7 M.	4	15·0	580§	297
b.	**Hannover**	13,200	398½	73¾	24½	16,000 T. S.	Wilhelmshaven	1905	..	1,157,500	9½–4 K. S.	3	8 K.S.	6 K.S.	10–6 K. S.	6¾ K.S.	4 *11-in.*, 14 *6·7-in.*, 12 *3·4-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	18·0	700 1800§	600
c. d. s.	**Heimdall**	4049	267	49¼	17¾	4393 T. S.	Wilhelmshaven	1892 1902	1893	233,500	7 K. S.	1¼	..	..	7¾ H. S.	..	3 *9·4-in.*, 10 *3·4-in.*, 7 M.	4	15·0	580§	297
b.	**Hessen**	12,997	398½	73¾	24½	16,000 T. S. & C.	Kiel (Germania)	1903	1905	1,157,500	9–4 K. S.	3	6 K.S.	6 K.S.	10–6 K. S.	6 K S.	4 *11-in.*, 14 *6·7-in.*, 12 *3·4-in.*, 12 *1·4-in.*, 8 M.	6 (5 sub.)	18·0	800 1600§	660
c. d. s.	**Hildebrand**	4049	267	49¼	17¾	4413 T. S	Kiel.	1892	1893	218,000	7 K. S.	1¼	..	..	7¾ H. S.	..	3 *9·4-in.*, 10 *3·4-in.*, 7 M.	4	15·0	580§	297
b.	**Kaiser Barbarossa**					13,000 C. & T.	Danzig	1900	1901												
b.	**Kaiser Friedrich III.**					13,000 C. & T.	Wilhelmshaven	1896	1898												
b.	**Kaiser Wilhelm II.†**	10,974	377¼	66¾	25½	13,000 C. & T. S.	Wilhelmshaven	1897	1900	962,500	11¾ H. N. S.	3	..	..	9¾ H. N. S.	6 H.N.S.	4 *9·4-in.*, 18 *5·9-in.*, 12 *3·3-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	18·0	650 1000§	700
b.	**Kaiser Wilhelm der Grosse**					13,000 C. & T. S.	Germania.	1899	1901												
b.	**Kaiser Karl der Grosse**					13,000 C. & T. S.	Hamburg (Blohm & Voss)	1899	1901												
b.	**Kurfürst Friedrich Wilhelm.**	9874	354¼	65	24½	9959	Wilhelmshaven	1891	1893	653,000‡	15¾ *comp.*	2½	..	..	11¾ *comp.*	1½	6 *11-in.*, 8 *4·1-in.*, 8 *3·4-in.*, 12 *1·4-in.*, 8 M., 2 l.	3 (sub.)	16·0	680 800	550
b.	**Lothringen**	12,997	398½	73¾	24½	16,950 W. T. & C.	Schichau (Danzig)	1904	1906	1,157,500	9–4 K. S.	3	6 K. S.	6 K.S.	10–6 K. S.	6 K. S.	4 *11-in.*, 14 *6·7-in.*, 12 *3·4-in.*, 12 *1·4-in.*, 8 M.	6 (5 sub.)	18·54 *t*	800 1600§	600
b.	**Mecklenburg**	11,643	393¾	68¼	24¾	14,000 C. T. & S.	Stettin (Vulcan)	1901	1903	1,061,250	9–4 K.S.	3	5½ K.S.	6 K.S.	10 K.S.	6 K.S.	4 *9·4-in.*, 18 *5·9-in.*, 12 *3·3-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	18·1 *t*	700 1450§	715
c. d. s. b.	**Odin**	4084	267	49¼	17¾	4800 T. S.	Danzig	1894	1896	..	9½ H. S.	2	..	..	8¾ H. S.	..	3 *9·4-in.*, 10 *3·4-in.*, 6 M.	4 (1sub.)	15·0	225§	266
b.	**Oldenburg**	5140	246	59	19½	3900	Stettin	1884	1887	235,342	12 *comp.*	1	..	..	8 *comp.*	..	8 *9·4-in.*, 2 *3·4-in.*, 6 M.	4	13·5 *t*	475	356

b.	**Pommern**	13,200	398½	72¾	24½	16,000 T. S.	Stettin (Vulcan)	1905	..	1,214,000	9½–4 K.S.	3	8 K.S.	6 K.S.	10–6 K.S.	6¾ K.S.	4 *11-in.*, 14 *6·7-in.*, 22 *3·4-in.*, 4 *1·4-in.*, 4 M.	6 (5sub.)	18·0	700 1800§	736
b.	**Preussen**	12,997	389½	73¾	24½	18,374 W.T.& C.	Stettin	1903	1905	1,157,500	9–4 K.S.	3	6 K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *11-in.*, 14 *16·7-in.*, 12 *3·4-in.*, 12 *1·4 in.* & 8 M.	6 (5sub.)	18·6 *t*	800 1600§	660
a. c.	**Prinz Adalbert**	8858	393½	65½	24	18,500 Dürr.	Kiel	1901	1903	885,000	4 K.S.	1½	3 K.S.	3 K.S.	6 K.S.	4 K.S.	4 *8·2-in.*, 10 *5·9-in.*, 12 *3·4-in.*, 14 *1·4-in.*, 4 M.	4 (3sub.)	20·3	950 1500§	504
a. c.	**Prinz Heinrich**	8759	396	64¼	25¼	15,000 Durr.	Kiel	1900	1902	730,000	4 K.S.	2½	4 K.S.	..	6 K.S.	4 K.S.	2 *9·4-in.*, 10 *5·9-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	4 (3sub.)	20·0	950	528
a. c.	**Roon**	9350	403¼	65½	24	20,625 Dürr.	Kiel	1903	1905	875,000	4–3 K.S.	2¾	6 K S.	4 K.S.	6 K.S.	4 K.S.	4 *8·2-in.*, 10 *5·9-in.*, 16 *3·4-in.*, 10 *1·4-in.*, 4 M.	4 (sub.)	21·17	750 1800§	50
b.	**Sachsen**	7252	321½	59	21	6000 Dürr.	Stettin	1877	1878	422,178	15¾	3	10	..	15¾	..	6 *10·2-in.*, 8 *3·4-in.*, 8 *1·4-in.*, 1 l., 6 M.	5 (2sub.)	14·0	700	376
b.	**Sachsen** (Ersatz)*	18,000	..	..	..	..	Bremen (Weser)	1896 Blg.	..	1,825,000	..	..	..	..	..	..	..	..	19·5	..	860
a. c.	**Scharnhorst**	11,420	449½	70¾	24½	26,000 T. S.	Hamburg	1906	..	..	6–3 K.S.	2	6–4¾	..	6¾	..	8 *8·2-in.*, 6 *6-in.*, 20 *3·4-in.*, 14 smaller	4	22·5	800§ 2000	650
b.	**Schlesien**	13,200	398½	72¾	24½	16,939 T. S. & C.	Schichau	1906	..	1,214,000	9½–4 K S.	3	8 K.S.	6 K.S.	10–6 K.S.	6¾ K.S.	4 *11-in.*, 14 *6·7-in.*, 22 *3·4-in.*, 4 *1·4*, 4 M.	6 (sub.)	18·5 *t.*	700 1800†	736
b.	**Schleswig-Holstein**						Germania														
b.	**Schwaben**	11,613	393¾	68¼	24¾	14,000 C.&T.S.	Wilhelmshaven	1901	1903	1,061,250	9–4 K.S.	3	5½ K.S.	6 K.S.	10–6 K.S.	6 K.S.	4 *9·4-in.*, 18 *5·9-in.*, 12 *3·3-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	18·0	700 1450§	715
c. d. s.	**Siegfried**	4049	267	49¼	17¾	4800 T. S.	Germania	1889	1890	175,000	9½	1¼	..	..	7¾	..	3 *9·4-in.*, 6 *3·4-in.*, 6 M.	4	14·8 *t*	225§	276
b.	**Weissenburg**	9874	354¼	65	24¾	9000	Stettin (Vulcan)	1891	1893	659,475‡	15¾	2½	..	..	11¾	1½	6 *11-in.*, 8 *4·1-in.*, 8 *3·4-in.*, 12 *1·4-in.*, 8 M., 2 l.	3 (sub.)	16·0	680 800	552
b.	**Wettin**	11,643	393¾	68¼	24¾	14,000 C.&T.S.	Schichau	1901	1902	1,071,250	9–4 K.S.	3	5½ K.S.	6 K.S.	10 K.S.	6 K.S.	4 *9·4-in.*, 18 *5·9-in.*, 12 *3·3-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	18·0	700 1450§	715
b.	**Wittelsbach**						Wilhelmshaven	1900	1902	1,071,250											
b.	**Wörth**	9874	354¼	65	24½	10,224 (*t*)	Kiel	1892	1894	595,250‡	15¾	2½	..	..	11¾	1½	6 *11-in.*, 8 *4·1-in.*, 8 *3·4-in.*, 12 *1·4-in.*, 8 M., 2 l.	3 (sub.)	17·2	680 800	552
b.	**Württemberg**	7252	321½	60	19½	6000 T. S.	Stettin	1878	1881	402,512	15¾	3	10	..	10	..	6 *10·2-in.*, 8 *3·4-in.*, 8 *1·4-in.*, 1 l., 6 M.	5 (2sub.)	14·0	700	376
b.	**Württemberg** (Ersatz)**	..	..	..	..	..	..	1898 Pro.		1,825,000	..	..	..	..	..	..	..	..	..	..	..
a. c.	**Yorck**	9350	403¼	65½	24	19,183 Dürr.	Hamburg	1904	1905	875,000	4–3 K.S.	2	6 K.S.	4 K.S.	6 K.S.	4 K.S.	4 *8·2-in.*, *10* *5·9-in.*, 16 *3·4-in.*, 10 *1·4-in.*, 4 M.	4 (sub.)	21·1 *t*	750 1600†	550
b.	**Zähringen**	11,643	393¾	68¼	24¾	15,000 C.&T.S.	Germania	1901	1902	1,071,250	9–4 K.S.	3	5½ K.S.	6 K.S.	10 K.S.	6 K.S.	4 *9·4-in.*, 18 *5·9-in.*, 12 *3·3-in.*, 12 *1·4-in.*, 8 M.	6 (5sub.)	19·0	650 1000§	715

* Estimates, 1906. ** Estimates, 1907; particulars not disclosed. † Kaiser Wilhelm II. fitted as fleet flagship to receive the Emperor, with a staff of 64. ‡ Exclusive of armament. § Also liquid fuel.

Armoured gunboats Basilisk, Biene, Camäleon, Crocodil, Hummel, Mücke, Natter, Salamander, Skorpion, Viper and Wespe, 1091 tons, launched 1876–81.

GERMANY.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
3rd cl. *cr.*	**Amazone** . . shd.	2618	328	38½	16	8000 T.S.	Kiel (Germania) .	1900	1901	247,000	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (sub.)	21 5 *t*	560	249
" "	**Arcona** . . shd.	2657	328	38½	16	8000 T.S.	Bremen (Weser) .	1902	1903	254,500	2	..	10 *4·1-in.*, 12 *1·4-in.*, 4 M., 2 l.	2 (sub.)	21·0	700	249
" "	**Ariadne** . . shd.	2618	328	38½	16	8000 T.S.	Bremen (Weser) .	1900	1901	247,000	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (sub.)	22·0	560	249
" "	**Berlin.** . . shd.	3200	341	43¼	16½	11,000 T.S.	Danzig . .	1903	1904	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·2 *t*	800	..
" "	**Bremen** . . .	3200	341	43¼	16½	10,000 T.S.	Bremen (Weser) .	1903	1904	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·0	800	..
" "	**Bussard** . . .	1555	256	30¼	18¼	2900	Danzig . .	1890	1890	..	3	..	8 *4·1-in.*, 7 M. . .	2	16·5 *t*	300	165
to. g. b. .	**Comet** . . .	971	262½	31¼	13¾	5000	Stettin . . .	1892	1896	..	2	..	4 *3·4-in.*, 2 M. . .	3	21·0 *t*	120	115
3rd cl. *cr.*	**Condor** . . .	1614	246	33½	15	2930	Hamburg . .	1892	1892	..	3	..	8 *4·1-in.*, 7 M. . .	2	16·5 *t*	300	165
3rd cl. *cr.*	**Cormoran** . . .	1614	246	33½	15	2930	Danzig . . .	1892	1893	..	3	..	8 *4·1-in.*, 7 M. . .	2	16·0	300	165
3rd cl. *cr.*	**Danzig** . . .	3200	341	43¼	16½	10,000 T.S.	Danzig . . .	1905	1906	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·0	800	..
g.b. .	**Eber**	977	206¾	30¼	10¾	1300 T.S.	Danzig . . .	1903	1904	91,000	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·0	240	121
3rd cl. *cr.*	**Falke**	1555	246	33½	15	2900	Kiel . . .	1891	1902	..	3	..	8 *4·1-in.*, 7 M. . .	2	15·5 *t*	300	165
3rd cl. *cr.*	**Frauenlob** . . shd.	2657	328	38½	16	8000 T.S.	Bremen (Weser) .	1902	1904	254,500	2	..	10 *4·1-in.*, 12 *1·4-in.*, 4 M., 2 l.	2 (sub.)	21·0	700	249
2nd cl. *cr.*	**Freya**	5569	344½	57	20¾	10,000 Nic.	Danzig . . .	1897	1898	..	4 N.S.	4 N.S.	2 *8·2-in.*, 8 *6-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	3 (sub.)	19·5 *t*	825	465
3rd cl. *cr.*	**Gazelle** . . shd.	2603	328	38½	16¾	6400 Nic.	Kiel (Germania) .	1898	1898	225,000	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (sub.)	18·0	560	210
" "	**Gefion** . . .	3705	344⅓	42¾	20¾	9000	Danzig (Schichau) .	1893	1894	..	1¼	..	10 *4·1-in.*, 6 *2·1-in.*, 1 l., 8 M.	2	19·0	780	302

3rd cl. *cr.*	**Geier**	shd.	1597	249¼	34¾	15½	2960	Wilhelmshaven	1894	1896	..	3	..	8 *4·1-in.*, 7 M.	2	16·2 *t*	300	165
,, ,,	**Greif**		1971	318	32	14¾	5400	Kiel	1886	1887	..	..	..	2 *3·4-in.*, 4 M.	..	19·0	350	170
,, ,,	**Hamburg**	shd	3200	341	43¼	16½	11,500 T.S.	Stettin (Vulcan)	1903	1904	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·28 *t*	800	249
2nd cl. *cr.*	**Hansa**	shd.	5791	345½	57¾	21¾	10,000 B.	Stettin (Vulcan)	1898	1899	..	4 N.S.	4 N.S.	2 *8·2-in.*, 8 *6-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	3 (sub.)	19·5	825	465
d.v.	**Hela**		2004	328	36	14¾	5860	Bremen	1895	1896	..	1¼	..	4 *3·4-in.*, 6 *1·9-in.*, 2 M.	3	20·0	500	178
2nd cl. *cr*	**Hertha**		5569	344½	57	21¾	10,000 B.	Stettin (Vulcan)	1897	1898	..	4 N.S.	4	2 *8·2-in.*, 8 *6-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	3 (sub.)	19·5 *t*	825	465
g. b.	**Iltis**	shd.	881	203½	29¾	10¾	1300 T	Danzig (Schichau)	1898	1898	100,000	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·5 *t*	165	121
3rd cl. *cr.*	**Irene** †	shd.	4224	308	46	21	8000	Stettin	1887	1888	220,000	3	..	4 *5·9-in.*, 8 *4·1-in.*, 6 *1·9-in.*, 1 l., 8 M.	3	19·8 *t*	540	365
to. g. b.	**Jagd**		1230	275½	31½	13¾	4000	Bremen	1888	1889	..	2	..	4 *3·4-in.*, 2 M.	3	20·0	230	141
g. b.	**Jaguar**	shd.	900	203½	29¾	10¾	1300 T.	Danzig (Schichau)	1898	1899	90,000	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·5 *t*	165	121
2nd cl. *cr.*	**Kaiserin Augusta**	shd.	5956	387	52½	23	14,000	Kiel (Germania)	1892	1896	..	3½	..	12 *5·9-in.*, 8 *3·4-in.*, 2 l., 8 M.	3	21·0	850	436
3rd cl. *cr.*	**Königsberg**		3350	354¼	54½	..	13,200 T.S.	Kiel	1906	..	..	..	..	10 *4·1-in.*, 8 *2·2-in.*, 4 M.	2 (sub.)	23·5	400 850	295
,, ,,	**Leipzig**		3200	341	43¼	16½	11,000	Bremen (Weser)	1905	1906	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·0	800	..
,, ,,	**Lübeck**		3200	341	43¼	16½	14,000 T.S. tur.	Stettin (Vulcan)	1904	1906	254,500	2	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·0	800	..
g. b.	**Luchs**		962	206¾	30¼	10¾	1300 T.S.	Danzig	1899	1900	91,000	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·5 *t*	240	121
3rd cl. *cr.*	**Medusa**	shd.	2618	328	38½	16	8000 T.S.	Bremen (Weser)	1900	1901	247,000	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (sub.)	22·0	560	249
,, ,,	**München**	shd.	3200	341	43¼	16½	11,000 T.S.	Bremen (Weser)	1904	1905	254,500	..	..	10 *4·1-in.*, 10 *1·4-in.*, 4 M., 2 l.	2 (sub.)	23·4 *t*	800	..
,, ,,	**Niobe**	shd.	2603	328	38½	15	8000 T.S.	Bremen (Weser)	1899	1901	217,500	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (1sub.)	20·0	560	250
,, ,,	**Nymphe**	shd.	2618	328	38½	15	8000 T.S.	Kiel (Germania)	1899	1901	217,500							
,, ,,	**Nürnberg**		3350	354¼	54½	..	13,200 T.S.	Kiel	1906	..	..	.	..	10 *4·1-in.*, 8 *2·2-in.*, 4 M.	2 (sub.)	23·5	400 850	295
g. b.	**Panther**		962	206¾	30¼	10¾	1300 T.S.	Danzig	1901	1902	91,000	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·5 *t*	240	121
cr.	**Pelikan** (mining ship)		2215	259	38	14½	3000	Kiel	1890	1891	..	..	..	4 *3·4-in.*, 4 M.	..	15·4 *t*	370	183

GERMANY.—Cruising Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			kts.	tons.	
3rd cl. *cr.*	**Pfeil** (Ersatz) **Comet** (Ersatz)	3740	..	..	..	(tur.)	Danzig Hamburg	Bldg.	..	..	..	..	10 *4·2-in.*, 12 smaller and M.	2	24·5	..	..
,, ,,	**Prinzess Wilhelm** shd.	4224	339½	46	21	8000	Gaarden	1887	1888	220,000	3	..	4 *5·9-in.*, 8 *4·1-in.*, 6 *1·9-in.*, 1 l., 8 M.	3	18·7 *t*	540	365
g. v.	**Schwalbe**	1102	203	30½	12¼	1500	Wilhelmshaven	1887	1887	..	3	..	8 *4·1-in.*, 7 M.	..	13·5 *t*	264	117
3rd cl. *cr.*	**Seeadler**	1614	246	33½	15	2800	Hamburg	1892	1892	..	3	..	8 *4·1-in.*, 7 M.	2	16·0	300	165
g. v.	**Sperber**	1102	236	29¾	12½	1500	Wilhelmshaven	1888	1889	..	3	..	8 *4·1-in.*, 6 M.	..	13·5 *t*	264	117
3rd cl. *cr.*	**Stettin**	3350	354¼	54½	..	13,200 T.S. tur.	Stettin (Vulcan)	1907	..	..	..	..	10 *4·1-in.*, 8 *2·2-in.*, 4 M.	2 (sub.)	23·5	400 850	295
3rd cl. *cr.*	**Stuttgart**	3350	354¼	54½	..	13,200 T.S. tur.	Kiel	1906	..	..	..	..	10 *4 1-in.*, 8 *2·2-in.* 4 M.	2 (sub.)	23·5	400 850	295
3rd cl. *cr.*	**Thetis** shd.	2618	344½	38½	16	8000 T.S.	Danzig	1900	1901	247,000	2	..	10 *4·1-in.*, 14 *1·4-in.*, 4 M., 2 l.	2 (sub.)	21·8 *t*	560	249
g. b.	**Tiger**	962	203½	29¾	10	1300 T.S.	Danzig	1899	1900	..	..	..	8 *3·4-in.*, 6 *1·4-in.*, 2 M.	..	13·5 *t*	240	121
3rd cl. *cr.*	**Undine** shd.	2657	328	38½	16	8000 T.S.	Kiel (Howaldt)	1902	1904	254,500	2	..	10 *4·1-in.*, 12 *1·4-in.*, 4 M., 2 l.	2 (sub.)	21·0	700	249
2nd cl. *cr.*	**Victoria Luise**	5569	344½	57	21¾	10,000 Dürr.	Bremen	1897	1898	..	4 H.S.	4 H.S.	2 *8·2-in.*, 8 *6-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	3 (sub.)	19·5 *t*	825	465
,, ,,	**Vineta** shd.	5791	345½	57¾	21¾	10,000 Dürr.	Danzig	1897	1899	..	4 H.S.	4 H.S.	2 *8·2-in.*, 8 *6-in.*, 10 *3·4-in.*, 10 *1·4-in.*, 4 M.	3 (sub.)	19·5 *t*	825	465
	Ersatz Greif and **Ersatz Jagd** projected 1907																

The Imperial Yacht Hohenzollern. 4187 tons, 9460 I.H.P., 22 knots, carries 8 1·9-in. Q.F., but provision is made for mounting 3 4·1-in., 12 1·9-in. Q.F. and 4 M. River gunboats for China, the Tsingtau, Vaterland and Vorwärtz (168 tons). The mining vessels Nautilus (launched 1906) and B are in hand.

Merchant Cruisers (Auxiliaries to the German Navy).

To what Company belonging.	Name of Ship.	Register Tonnage.	Length.		Beam.		Draught of Water.		Indicated H.P.	Ocean Speed.	When Built.	Armament of each Ship.
		tons.	ft.	in.	ft.	in.	ft.	in.		knots.		
North German Lloyd	**Kaiser Wilhelm II.** . . .	19,500	678	0	72	0	..		44,000	24	1902	The armament is of 6-in. and smaller quick-firers.
	Kronprinz Wilhelm .	14,800	640	0	66	0	26	3	30,000	23	1901	
	Kaiser Wilhelm der Grosse	14,349	625	0	66	0	27	0	28,000	23	1897	
	Deutschland . . .	16,500	..		..		..		37,000	23½	1900	
	Trave	5262	436	6	48	0	..		1300(*a*)	16	1886	

(*a*) Nominal horse-power.

GREECE.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	**Hydra**	4808	334½	51¾	23¼	7000	St. Nazaire La Seyne	1889 1900	1891	..	11¾–4	2½	3	..	13½	..	3 *10·6-in.* Canet, 5 *5·9-in.*, 1 *3·9-in.*, 8 *2·5-in.*, 4 *1·8-in.*, 12 *1·4-in.*	3	17·0	600	400
,,	**Psara**	4808	334½	51¾	23¼	7000	Havre La Seyne	1890 1897	1892	..	11¾–4	2½	3	..	13½	..					
,,	**Spetsai**	4808	334½	51¾	23¼	7000	Havre La Seyne	1889 1900	1891	..	11¾–4	2½	3	..	13½	..					

GREECE.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.						in.	in.			knots.	tons.	
g.v.	**Acheloos**	420	130	24½	11½	400	Blackwall	1884	1885	..	..	..	2 *3·7-in.* (K.), 3 M.	..	10·0	50	..
,,	**Alphios**	420	130	24½	11½	400	Blackwall	1884	1885	..	..	..	2 *3·7-in.* (K.), 3 M.	..	10·0	50	..
,,	**Eurotas**	420	130	24½	11½	400	Dumbarton	1884	1885	..	..	..	2 *3·7-in.* (K.), 3 M.	..	10·0	50	..
corv.	**Sfaktirea**	1000	216½	29¼	18	2400	England	1885	1886	..	..	..	2 *3·9-in.* (K.), 2 M.	..	14·5	100	..

Torpedo depôt-ship.—Kanaris, 1100 tons, 500 I.H.P., 2 3·9-in. (Krupp) guns, 14 knots speed. Gunboats, Ambrakia and Aktion, of 440 tons displacement, 380 horse-power, 10 knots speed, fitted with 1 10·2-in. Krupp gun and 2 machine guns; launched 1885.

ITALY.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	ins	ins.	ins.	ins.	ins.			knots.	tons.	
a.c.	**Amalfi**	9832	429¾	68¾	24¾	18,000	Genoa (Odero)	Bldg.		880,000	8–3½	1¾	7	7	7–6	..	4 *10-in.*, 8 *8-in.*, 16 *3-in.*, 8 *1·8-in.*	3 (2sub.)	22·5	700 1500	
„	**Ammiraglio di St. Bon**	9645	344½	69¼	24¾	13,500	Venice	1897	1901	..	9¾–4 H.S.	3–1½	6 H.S.	6 H.S.	9¾ H.S.	6 H.S.	4 *10-in.*, 8 *6-in.*, 8 *4·7-in.*, 2 *2·9-in.*, 8 *2·2-in.*, 12 *1·4-in.*, 2 M.	4	18·3 *t*	600	548
b.	**Andrea Doria**	11,027	328¼	65¼	27¼	10,500	Spezia	1885	1889	765,500	18 *comp.*	3	18 *comp.*	14 *comp.*	18 *comp.*	..	4 *105-ton* (A.), 2 *6-in.*, 4 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 17 *1·4-in.*, 2 M.	5 (2sub.)	16·1 *t*	850	526
„	**Benedetto Brin**	13,214	426½	78¼	27¼	20,400 B.	Castellamare	1901	1904	..	6–2 H.S.	3	6 H.S.	8 H.S.	10 H.S.	6 H.S.	4 *12-in.*, 4 *8-in.*, 12 *6-in.*, 16 *3-in.*, 8 *1·8-in.*, 4 M.	4 (sub.)	19·5 *t*	1000 2000	719
a.c.	**Carlo Alberto**	6396	325	59	23	13,220 *t*	Spezia	1896	1898	..	6–4½ H.S.	1½	6 H.S.	..	6 H.S.	4½ shields	12 *6-in.*, 6 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 10 *1·4-in.*, 2 M.	4	19·2 *t*	1000	500
t.	**Dandolo**	12,071	341	64¾	26½	8045	Spezia	1878 1898	1881	872,640	21½	2	17	16	10 H.S.	2 screens	4 *10-in.* (A.), 8 *6-in.*, 5 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 14 *1·4-in.*, 2 M.	4	15·6 *t*	732	506
„	**Duilio**	10,962	341	64¾	26½	7710	Castellamare	1876	1880	850,400	21½	2	17	16	18	..	4 *100-ton* M.L.R. (A.), 3 *4·7-in.*, 2 *2·9-in.*, 8 *2·2-in.*, 22 *1·4-in.*, 2 M.	3	15·0	1000	487
„	**Emanuele Filiberto**	9645	344½	69¼	24¾	13,500	Castellamare	1897	1902	..	9¾–4 H.S.	3–1	6 H.S.	6 H.S.	9¾ H.S.	6 H.S.	4 *10-in.*, 8 *6-in.*, 8 *4·7-in.*, 2 *2·9-in.*, 8 *2·2-in.*, 12 *1·4-in.*, 2 M.	4	18·3 *t*	600	536
b.	**Francesco Morosini**	11,145	328¼	65¼	27¼	9560	Venice	1885	1889	770,680	18 *comp.*	3	18 *comp.*	14 *comp.*	18 *comp.*	..	4 *105-ton* (A.), 2 *6-in.*, 4 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 17 *1·4-in.*, 2 M.	5 (2sub.)	17·0	850	509
a.c.	**Francesco Ferruccio**	7294	344	59¾	23¼	13,500 Nic.	Venice	1902	1904	..	6–3 H.S.	1½	6 H.S.	5 H.S.	6 H.S.	6 H.S.	1 *10-in.*, 2 *8-in*, 14 *6-in.*, 10 *2·9-in.*, 6 *1·8-in.*, 2 M.	4 (sub.)	20·0	655 1200	540
„	**Giuseppe Garibaldi**					14,713 *t* Nic.	Sestri-Ponente (Ansaldo)	1899	1901												
b.	**Italia**	15,407	400½	74	31¼	11,986 *t*	Castellamare	1880	1884	1,167,680	16 funnel op'nings	3	..	..	19 *comp.*	..	4 *100-ton* (A.), 8 *6-in.*, 4 *4·7-in.*, 12 *2·2-in.*, 24 *1·4-in.*, 2 M.	4	18·0 *t*	1200	748
„	**Lepanto**	15,549	400½	74	31¼	15,800 *t*	Leghorn (Orlando)	1883	1887	1,150,880	16 funnel op'nings	3	..	..	19 *comp.*	..	4 *100-ton* (A.), 8 *6-in.*, 4 *4·7-in.*, 12 *2·2-in.*, 34 *1·4-in.*, 2 M.	4	18·38 *t*	1650	748

ITALY.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			kts.	tons.	
a.c.	**Marco Polo**	4511	327	48¼	19½	10,543 *t*	Castellamare	1892	1895	344,400	4	1	4	4	4	..	6 *5·9-in.*, 10 *4·7-in.*, 2 *2·9-in.*, 9 *2·2-in.*, 4 *1·4-in.*, 2 M.	5 (1sub.)	19·0 *t*	600	394
b.	**Napoli**	12,425	435½	73½	27¼	20,000 Nic.	Castellamare	1905	..	1,120,000	9¾–4 H.S.	2	8 H.S.	8 H.S.	8 H.S.	6 H.S.	2 *12-in.*, 12 *8-in.*, 12 *3-in.*, 12 *1·8-in.*	4 (2sub.)	22·0	1000 2000	..
	Regina Elena					20,000 B.	Spezia	1904	1906												
a.c.	**Pisa**	9832	429¾	68¾	24¾	18,000	Leghorn (Orlando)	Pro.	..	..	8–3½	1¾	7	7	7–6	..	4 *10-in.*, 8 *8-in.*, 16 *3-in.*, 8 *1·8-in.*	3 (2sub.)	22·5	700 1500	..
b.	**Regina Margherita**	13,214	426½	78¼	27¼	20,664 Nic.	Spezia	1901	1904	..	6 H.S.	3	6 H.S.	8 H.S.	8 H.S.	6 H.S.	4 *12-in.* 4 *8-in.*, 12 *6-in.*, 16 *3-in.*, 8 *1·8-in.*, 4 M.	4 (sub.)	20·2 *t*	1000 2000	719
,,	**Re Umberto**	13,673	400	76¾	28½	19,500	Castellamare	1888	1893	1,058,500	4	3	4	2¾	18	..	4 *67-ton* (A.), 8 *6-in.*, 16 *4·7-in.*, 2 *9-in.*, 15 *2·2-in.*, 14 *1·4-in.*, 2 M.	5	19·0	1200	785
,,	**Roma**	12,425	435½	73½	27¼	20,000 B. & W.	Spezia	1907	..	1,120,000	9¾–4 H.S.	2	8 H.S.	8 H.S.	8 H.S.	6 H.S.	2 *12-in.*, 12 *8-in.*, 12 *3-in.*, 12 *1·8-in.*	4 (2sub.)	22·0	1000 2000	..
,,	**Ruggiero di Lauria**	10,997	328¼	65¼	27¼	10,600	Castellamare	1884	1887	777,560	18 *comp.*	3	18 *comp.*	14 *comp.*	18 *comp.*	..	4 *105-ton* (A.), 2 *6-in.*, 4 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 17 *1·4-in.*, 2 M.	5 (2sub.)	17·0	910	509
a.c.	**San Giorgio** **San Marco**	9832	429¾	68¾	24¾	18,000	Castellamare	Bldg.	..	..	8–3½ H.S.	1¾	7 H.S.	7 H.S.	7–6 H.S.	7 H.S.	4 *10-in.*, 8 *8-in.*, 16 *3-in.*, 8 *1·8-in.*	3 (2sub.)	22·5	700 1500	..
b.	**Sardegna**	13,640	411	76¾	28½	19,650 *t*	Spezia	1890	1895	1,057,440	4	3	4	2¾	14¼ *comp.*	..	4 *67-ton* (A.), 8 *5·9-in.*, 16 *4·7-in.*, 2 *2·9-in.*, 20 *2·2-in.*, 10 *1·4-in.*, 2 M.	5	20·1 *t*	1200	785
,,	**Sicilia**	13,087	400	76¾	28½	19,500	Venice	1891	1895	1,050,000	4	3	4	2¾	18 *comp.*	..	4 *67-ton* (A.), 8 *5·9-in.*, 16 *4·7-in.*, 2 *2·9-in.*, 20 *2·2-in.*, 10 *1·4-in.*, 2 M.	5	19·2 *t*	1200	785
a.c.	**Varese**	7294	344	59¾	23⅓	13,500 B.	Leghorn (Orlando)	1899	1900	..	6–4½ H.S.	1½	6 H.S.	5 H.S.	6 H.S.	6 H.S.	1 *10-in.*, 2 *8-in.*, 14 *6-in.*, 10 *2·9-in.*, 6 *1·8-in.*, 2 M.	4	20·0	650 1200	500
b.	**Vittorio Emanuele**	12,425	435½	73½	27¼	20,000 B.	Castellamare	1904	..	1,120,000	9¾–4 H.S.	2	8 H.S.	8 H.S.	8 H.S.	6 H.S.	2 *12-in.*, 12 *8-in.*, 12 *3-in.*, 12 *1·8-in.*	4 (sub.)	22·0	1000 2000	..
a.c.	**Vettor Pisani**	6396	325	59	23	13,000	Castellamare	1895	1897	..	6 H.S.	1½	6 H.S.	..	6 H.S.	4½ shields	12 *6-in.*, 6 *4·7-in.*, 2 *2·9-in.*, 10 *2·2-in.*, 10 *1·4-in.*, 2 M.	4	20·0	600	504
	1 Battleship	16,000*						Pro.													

* Tonnage doubtful.

ITALY.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armaments.		Speed.	Coal.	Complement.
											Deck.	Gun Position.*	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
to.cr.	**Agordat**	1292	287½	30½	11	8000	Castellamare	1899	1900	..	1	..	4 *4·7-in.*, 8 *2·2-in.*, 2 *1·4-in.*	2	22·0	160	158
to.g.b.	**Aretusa**	833	230	26¾	11¾	4420	Leghorn (Orlando)	1891	1892	72,920	1	..	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	6	20·7 *t*	120	111
3rd cl. cr.	**Calabria**	2428	249¼	42	16¾	4094 *t*	Spezia	1894	1897	183,120	2	..	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	16·4 *t*	500	257
to.g.b.	**Calatafimi**	833	229½	27	10¼	4136	Castellamare	1893	1894	72,920	1	..	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	6	20·0	120	111
„	**Caprera**	833	230	27¼	10¼	4189	Leghorn (Orlando)	1894	1895	72,920	1	..	2 *4·7-in.*, 4 *2·2-in.*, 2 *1·4-in.*	5	21·0	120	111
to.cr.	**Coatit**	1292	287½	30½	11	8160	Castellamare	1899	1902	..	1	..	4 *4·7-in.*, 8 *2·2-in.*, 2 *1·4-in.*	2	21·1 *t*	160	158
3rd cl. cr.	**Cristoforo Colombo**	2279	249	36	17½	2321	Venice	1892 Rebuilt	1893	157,240	..	..	6 *4·7-in.*, 2 *2·2-in.*, 4 *1·4-in.*	..	16·0	445	238
g.v.	**Curtatone**	1272	177¼	32¾	13½	1100	Venice	1887	1888	58,440	..	..	4 *2·2-in.*, 2 *1·4-in.*, 2 M.	..	12·0	197	131
g.b.	**Cyclope**	831	..	..	..	2298	Naples	1903	1903	..	..	..	..	..	15·0	..	..
3rd cl. cr.	**Dogali**	2055	250	37	14½	7600	Elswick	1887	1889	156,040	2	4½	6 *6-in.* (A.), 1 *2·9-in.*, 9 *2·2-in.*, 2 *1·4-in.*, 2 M.	4	19·66 *t*	480	257
„	**Elba** shd.	2689	272½	40¾	16½	7471 *t*	Castellamare	1893	1895	200,000	2	4½	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·9 *t*	500	272

* Shields.

ITALY.—Cruising Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
3rd cl. *cr.*	**Etna** . . .	3470	282¼	42½	19	6169	Castellamare .	1885	1887	226,720	1½	5	2 *9·8-in.* (A.), 6 *5·9-in.*, 1 *2·9-in.*, 5 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·8	630	315
to.g.b. .	**Euridice** .	905	229½	27	10¼	4162	Castellamare . .	1891	1892	72,920	1	..	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	6	19·8 *t*	120	111
3rd cl. *cr.*	**Etruria** . .	2245	262½	39½	16½	7585 *t*	Leghorn (Orlando)	1891	1893	183,120	2	4½	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 10 *1·4-in.*, 2 M.	2	19·84 *t*	400	257
„ „	**Fieramosca** . .	3534	290	43½	19¼	7700	Leghorn (Orlando)	1888	1890	240,120	1½	5	2 *9·8-in.*, 6 *6-in.*, 1 *2·9-in.*, 5 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·5 *t*	450	315
3rd cl. *cr.*	**Giovanni Bausan** .	3277	275½	42½	18¼	6500	Elswick . .	1883	1885	179,120	1½	5	2 *9·8-in.* (A.), 4 *5·9-in.*, 1 *2·9-in.*, 4 *2·2-in.*, 8 *1·4-in.*, 2 M.	2 (1sub.)	17·5 *t*	600	295
to.g.b. .	**Goito**	843	230	25½	11¾	2620	Castellamare . .	1887	1888	70,680	1	..	4 *2·2-in.*, 5 *1·4-in.* . .	5	19·0	130	111
g.v. .	**Governolo** . .	1235	185	33¾	13¾	1100	Venice . .	1894	1896	58,440	..	..	4 *4·7-in.*, 4 *2·2-in.*, 2 *1·4-in.*, 2 M.	..	13·0	200	131
to.g.b. .	**Iride** . .	931	229½	27	10¼	4242	Castellamare . .	1891	1892	72,920	1	..	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	6	19·6 *t*	120	111
3rd cl. *cr.*	**Liguria** . .	2245	262½	39¼	16¾	7677 *t*	Sestri (Ansaldo) .	1893	1894	183,120	2	4½	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 10 *1·4-in.*, 2 M.	2	19·6 *t*	430	257
„ „	**Lombardia** . .	2351	262½	39½	16½	6843 *t*	Castellamare . .	1890	1892	183,120	2	4½	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·0 *t*	430	257
to.g.b. .	**Minerva** . .	833	246	27½	11¾	4800 W.T.	Sestri (Ansaldo) .	1892	1893	72,720	1	..	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	5	21·0	120	111

to.g.b.	**Montebello**	801	230	25½	11¾	2776	Spezia	1888	1899	74,120	..	1	6 *2·2-in.*, 2 *1·4-in.*	4	18·0	100	111
„	**Partenope**	821	246	27½	11¾	4200	Castellamare	1890	1890	71,000	..	1	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	4	19·0	100	111
3rd cl. *cr.*	**Piemonte**	2597	300	38	15	12,000	Elswick	1888	1890	220,000	3	3	6 *6·6-in.*, 6 *4·7-in.*, 10 *2·2-in.*, 6 *1·4-in.*, 4 M.	2	21·0	560	325
„ „	**Puglia**	2498	269	41	16¾	7000	Taranto	1898	1900	200,000	4½	1	4 *5·9-in.*, 6 *4·7-in.*, 1 *2·9-in.*, 8 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	20·0	650	257
to.g.b.	**Saetta**	395	187	19¾	6½	2400	Castellamare	1887	1888	38,880	..	..	2 *2·2-in.*, 4 *1·4-in.*	3	20·0	90	70
3rd cl. *cr.*	**Stromboli**	3836	282¼	42½	19	6298	Venice	1886	1888	220,080	5	1·5	2 *9·8-in.* (A.), 6 *5·9-in.*, 1 *2·9-in.*, 5 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·0	600	315
to.g.b.	**Tripoli**	885	230	25¾	11¾	2543	Castellamare	1886	1887	72,080	..	1	7 *2·2-in.*	4	18·0	130	107
3rd cl. *cr.*	**Umbria**	2245	262½	39½	16½	7104 *t*	Leghorn (Orlando)	1891	1893	183,120	4½	2	4 *5·9-in.*, 6 *4·7-in*, 8 *2·2-in.*, 10 *1·4-in.*, 1 l., 2 M.	2	18·83 *t*	430	257
to.g.b.	**Urania**	833	230	27	11¼	4397	Sestri (Odero)	1891	1892	72,920	..	1	1 *4·7-in.*, 6 *2·2-in.*, 3 *1·4-in.*	6	20·0	120	111
3rd cl. *cr.*	**Vesuvio**	3373	282¼	42½	19	6820	Leghorn (Orlando)	1886	1888	218,320	5	1·5	2 *9·8-in.*, 6 *5·9-in.*, 1 *2·9-in.*, 5 *2·2-in.*, 8 *1·4-in.*, 2 M.	2	17·0	600	315
g.v.	**Volturno**	1155	177¼	32¾	14¼	1100	Venice	1887	1888	58,960	..	..	4 *4·7-in.*, 4 *2·2-in.*, 2 *1·4-in.*, 2 M.	..	13·0	206	131

***Subsidised auxiliary cruisers and despatch vessels.*—Nord America (La Veloce S.S. Co.), Regina Margherita, Galileo Galilei, Marco Polo, Umberto I.,** Cristoforo Colombo, Elettrico, Candia, **Malta,** Perseo, Orione, and some others (Navigazione **Generale). The armament of these vessels is 2 2·2-in.** Q.F., **and 4 1·4-in.** M. The coal and liquid fuel transports Bronte and Sterope (9490 tons) are completed.

JAPAN.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.*	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.						in.	in.	in	in.	in.	in.			knots.	tons.	
a.c.	**Adzuma**	9436	431½	59¼	24¾	17,000 B.	St. Nazaire	1899	1901	..	7–3½ H. S.	3	5 H.S.	..	6 H. S.	6 H.S.	4 *8-in.*, 12 *6-in.*, 12 *3-in.*, 8 *1·8-in.*	5 (4 sub.)	20·0	600 1275	482
b.	**Aki**	19,200	482	83½	27½	18,000 My.	Kure	1907	..	..	9–5 K. S.	..	..	..	..	..	4 *12-in.*, 12 *10-in.*, 12 *4·7-in.*	5 (4 sub.)	20·5	..	..
”	**Asahi**	15,200	400½	75¼	27½	15,000 B.	Clydebank	1899	1900	..	9–4 H. S.	4–2½	6 H.S.	12 H.S.	14 H. S.	6 H.S.	4 *12-in.*, 14 *6-in.*, 20 *12-pr.*, 8 *3-pr.*, 4 *2½-pr.*	4 (sub.)	18	700 1549	750
a.c.	**Asama**	9700	408	67	24¼†	19,000 *t*	Elswick	1898	1899	..	7–3½ H. S.	2	5 H.S.	..	6	6 H.S.	4 *8-in.*, 14 *6-in.* (A.), 12 *12-pr.*, 8 *2½-pr.*	5 (4 sub.)	22·1 *t*	600 1409	482
”	**Aso** (*ex* Bayan)	7726	443	55¾	22	17,400 My. *t.*	La Seyne	1900	1902	..	8–3 K.S.	2	3 K.S.	..	7 K.S.	3 K.S.	2 *8-in.*, 8 *6-in.*, 32 *2·9-in.*, 20 *3-pr.*, 6 *1-pr.* 3 l., and M.	2 (sub.)	22 *t*	750 11,000	..
b.	**Chin-Yen**	7400	308½	59	20	6200	Stettin	1882	1884	..	14	3	12	..	12	..	4 *12-in.* (K.), 4 *6-in.*, 8 l., 8 M.	3	14	1000	250
a.c.	**Chiyoda**	2450	308	42½	14	5700 B.	Clydebank	1889	1890	..	4½	1–2	..	..	..	..	10 *4·7-in.*, 14 *3-pr.*, 3 M.	3	17·5	420	300
b.	**Fuji**	12,320	374	73	26½	14,000	Thames	1896	1897	..	18–6 H. S.	4–2½	4 H.S.	..	14 H. S.	6 H.S.	4 *12-in.*, 10 *6-in.*, 20 *3-pr.*, 4 *4½-pr.*	5 (4 sub.)	19·2 18·5 *t*	1100	600
”	**Hizen** (*ex* Retvizan)	12,700	374	72¼	25	16,000 My.	Philadelphia	1900	1902	..	9–4 K.S.	4	6·2 K.S.	9 K.S.	10 K.S.	5 K.S.	4 *12-in.*, 16 *6-in.*, 20 *3-pr.*, 6 *1-pr.*	6	18·0	800 2000	..
a.c.	**Ibuki**	14,600 •	443	78¾	26¼	.. My.	Kure	Bldg.	..	..	7–5 K.S.	..	..	..	7 K.S.	..	4 *12-in.*, 8 *8-in.*, 14 *4·7-in.*, 3 *1·8-in.*, 2 l., 4 M.	5 (4 sub.)	20·0	..	..
”	**Idzumo**	9750	400	68½	24¼†	17,300 B. *t.*	Elswick	1899	1901	..	7–3½ H.N.S.	2½	5 H.N.S.	..	6 H. N.S.	6 H.N.S.	4 *8-in.*, 14 *6-in.*, 12 *12-pr.*, 8 *2½-pr.*	4 (sub.)	22·0 21·7 *t*	600 1412	672
”	**Iwate**							1900	1901												
b.	**Iki** (*ex* Nicolai I)	9672	326	67	23	8000 B.	St. Petersburg	1888	1892	..	14–6 *comp.*	2½	..	..	10 *comp.*	6 *comp.*	2 *12-in.*, 4 *9-in.*, 8 *6-in.*, 12 Q.-F., 8 M., 4 l.	6	14·8 *t*	..	600
a.c.	**Ikoma**	13,750	440	75	26	20,500	Kure	1906	..	..	7–5 K.S.	..	..	..	7 K.S.	..	4 *12-in.*, 12 *6-in.*, 12 *4·7-in.*, 2 *1·8-in.*, 2 l., 4 M.	5 (4 sub.)	21·0	..	817
b.	**Iwami** (*ex* Orel)	13,516	367½	76	26	16,000 My.	St. Petersburg (Galerny)	1902	1904	..	9–4 K.S.	2½–1½	6 K.S.	9 K.S.	10 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 20 *3-in.*, 20 *3-pr.*, 6 *1-pr.*	2 (2 sub.)	18·0	800 2000	740

b.	**Kashima** . .	16,400	425	78⅛	26½	17,280 Nic.	Elswick .	1905	1906	..	9-4 K.S.	3-2	6	6	9 K.S	6 K.S.	4 *12-in.*, 4 *10-in.*, 12 *6-in.*, 12 *12-pr.*, 8 *3-pr.*, 6 M., 2 l.	5 (sub.)	19·2 *t*	750 2150	980
a.c.	**Kasuga** . .	7299	344	59¾	24¼	13,500 Nic.	Sestri . Ponente	1902	1904	760,000	6 H. N.S.	1½	6 H. N.S.	6 H. N.S.	6 H. N.S.	6 H. N.S.	1 *10-in.*, 2 *8-in.*, 14 *6-in.*, 10 *3-in.*, 6 *1·8 in.*, 2 M.	4	20·0	600 1150	500
b.	**Katori** . . .	15,950	420	78	27†	18,500 *t*, Nic.	Barrow .	1905	1906	..	9-5 K.S.	3-2	6	6	10 K.S.	6 K.S.	4 *12-in.*, 4 *10-in.*, 12 *6-in.*, 10 *12-pr.*, 8 *3-pr.*, 6 M., 2 l.	5 (sub.)	19·5 *t*	750 1800	..
a.c.	**Kurama** . . .	14,600	443	78¾	26¼	.. My.	Yokosuka .	Bldg.	..	..	7-5 K. S.	.	..	..	7 K. S.	..	4 *12-in.*, 8 *8-in.*, 14 *4·7-in.*, 3 *1·8-in.*, 2 l., 4 M.	5 (4 sub.)	20·0	..	..
b.	**Mikasa** . .	15,200	400	76	27¼	16,431 B.	Barrow .	1900	1902	..	9-4 H.N.S.	3	6 H. N.S.	12 H. N.S	14 H. N.S.	6 H. N.S.	4 *12-in.*, 14 *6-in.*, 20 *12-pr.*, 8 *3-pr.*, 4 *2½-pr.*, 8 M.	(4 sub.)	18·5 *t*	700 1520	935
c.d.	**Mishima** (*ex* Seniavine)	4792	265	52½	17	5000 My.	St. Petersburg	1894	1895	410,000	10	3	..	..	7-8	..	4 *9-in.*, 4 *4·7-in.*, 6 *1·8-in.*, 8 M.	4	16·0	400	318
a.c.	**Nisshin** . .	7700	344	59¾	24¼	13,500	Sestri Ponente	1903	1904	760,000	6 H. N.S.	1½	6 H. N.S.	6 H. N.S.	6 H. N.S.	6 H. N.S.	4 *8-in.*, 14 *6-in.*, 10 *3-in.*, 6 *1·8-in.*, 2 M.	4	20·0	600 1150	500
c.d.	**Okinoshima** (*ex* Apraxine)	4126	277½	52½	17½	5757 *t*.	St. Petersburg (New Admiralty)	1896	1898	..	10 H. S.	3	..	..	7¾ K. S.	..	3 *10-in*, 4 *4·7-in.*, 6 *1·8-in.*, 8 *1·4-in.*	4	15·0 *t*	215	318
b.	**Sagami** (*ex* Peresviet)	12,674	401¼	71¾	26	14,500 My.	St. Petersburg (Baltic)	1898	1901	..	9-7 H. S.	2¾	6 H. S.	9 H. S.	9 H. S.	6 H. S.	4 *10-in.*, 11 *6-in*, 16 *12-pr.*, 10 *3-pr*, 17 *1-pr.*	5	18·0	800 2056	732
,,	**Satsuma** . .	19,200	482	83½	27½	18,000 My.	Yokosuka .	1906	..	..	9-5 K. S.	..	..	..	..	..	4 *12-in.*, 12 *10-in.*, 12 *4·7-in.*	5 (4 sub.)	20·5	..	..
,,	**Shikishima** . .	14,850	400	75½	26½	16,355 B.	Thames .	1898	1899	..	9-4 H.N.S.	4-2½	6 H. N.S	12 H. N.S.	14	6 H. N.S.	4 *12-in.*, 14 *6-in.*, 20 *12-pr.*, 8 *3-pr.*, 4 *2½-pr.*, 8 M.	5 (4 sub.)	18·3	700 1722	741
,,	**Suo** (*ex* Pobieda) .	12,674	401¼	71½	26	14,500 My.	St. Petersburg (Baltic)	1900	1901	..	9½-4 H. S.	2¾	9 H. S.	9 H. S.	9 H. S.	6 H. S.	4 *10-in*, 11 *6-in.*, 16 *12-pr.*, 10 *3 pr.*, 17 *1-pr.*, 2 l.	5	18·0	800 2056	732
,,	**Tango** (*ex* Poltava)	10,960	367½	69	26	11,255 My.	St. Petersburg	1894	1898	1,098,000	15¾	3½	4	9	10 H. S.	6	4 *12-in.*, 12 *6-in.*, 40 smaller	6	16·0	900	700
a.c.	**Tokiwa** . .	9700	408	67	24¼†	20,556 *t*.	Elswick .	1898	1899	..	7-3½ H. S.	2	5 H.S.	..	6 H. S.	6 H.S.	4 *8-in.*, 14 *6-in.* (A.), 12 *12-pr.*, 8 *2½-pr.*	5 (4 sub.)	23·0	600 1409	500
,,	**Tsukuba** . .	13,750	440	75	26	20,500	Kure . .	1905	..	..	7-5 K. S.	..	..	..	7 K. S.	..	4 *12-in.*, 12 *6-in.*, 12 *4·7-in.*, 2 *1·8 in.*, 2 l., 4 M.	5 (4 sub.)	21·0	..	817
,,	**Yakumo** . .	9850	407¾	64¼	23¾	16,000 B.	Stettin .	1899	1901	..	7-3½ H. S.	2½	5 H.S.	..	6 H. S.	6 H.S.	4 *8-in.* (A.), 12 *6-in.*, 12 *12-pr.* (A.), 8 *2½-pr.*	5 (4 sub.)	20·0	600 1100	500

* All Q.F. guns and 12 in. for new ships are Armstrong.

† Mean draught.

Two other battleships and an armoured cruiser are projected.

JAPAN.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
g.v.	**Akagi**	615	164	27	10	700	Yokosuka	1889	1891	..	..	..	1 *8·2-in.*, 1 *5·9-in.*, 2 l., 2 M.	..	13·0	60	113
cr.	**Akashi**	2657	295¼	41¾	16½	8500	Yokosuka	1897	1898	327,000	2	4½ shield	2 *6-in.* (A.), 6 *4·7-in.*, 10 *3-pr.*, 2 *2½-pr.*, 4 M.	2	20·0	200 544	..
”	**Akitsushima**	3150	302	42½	18¼	8400	Yokosuka	1892	1893	..	3	..	4 *6-in.*, 6 *4·7-in.*, 10 *3-pr.*	4	19·0	..	330
t.g.b.	**Chihaya**	1250	273	31½	10	5500 Nor.	Yokosuka	1900	1901	..	..	..	2 *4·7-in.*, 4 *12-pr.*	5	21·0	123 344	..
cr.	**Chitose**	4760	395	49	18	15,500	San Francisco	1898	1899	205,200	4½	4½ shield	2 *8-in.*, 10 *4·7-in.*, 12 *12-pr.*, 6 *2½-pr.*	4	22·5	350 1000	405
”	**Hashidate**	4277	295	50¾	21¼	5400 My.	Yokosuka	1891	1893	..	2	12	1 *12·5-in.* (Canet), 11 *4·7-in.*, 5 *6-pr.*, 11 *3-pr.*, 6 M.	4	17·0	400	350
”	**Itsukushima**	4277	295	50¾	21½	5400 B.	La Seyne	1891	1893	..							
”	**Idzumi**	2800	270	40	18¼	6500 Nic.	Elswick	1878 1892	1879	..	3	2¼ shield	2 *6-in.*, 6 *4·7-in.*, 7 *6-pr.*, 2 M.	..	17·4 *t*	400	300
”	**Kasagi**	5416	374½	48¾	19	13,492	Philadelphia	1898	1899	205,200	4½–1¾	4½ shield	2 *8-in.*, 10 *4·7-in.*, 12 *12-pr.*, 6 *1·8-in.*	4	22·7 *t*	350 1000	405
t.c.	**Katsuraki**	1476	206¾	36	15	1600	Yokosuka	1885	1887	..	..	..	2 *6-in.* (K.), 5 *4·7-in.*, 2 M.	2	13·0	..	242
”	**Musashi**																
Scout	**Magami**	1329	316	31½	9¾	8000 turbines	Sasebo	1906	..	..	..	..	2 *4·7-in.*, 4 *12-pr.*	..	23·0	..	..
t.g.b.	**Makigumo** (*ex* Posadnik)	400	192½	24¼	7½	3600	Elbing	1892	1892	111,000	..	..	2 *1·8-in.*, 7 *1·4-in.*, 3 M.	3	22·0	90	87
cr.	**Matsushima**	4277	295	50¾	21¼	5400 B.	La Seyne	1890	1892	..	2	12	1 *12·5-in.* (Canet), 11 *4·7-in.*, 5 *6-pr.*, 11 *3-pr.*, 6 M.	4	17·5 *t*	400	350
g.v.	**Maya**	615	164	27	10	700	Yokosuka	1886	1887	..	..	..	1 *8·2-in.*, 1 *4·7-in.*, 2 M.	..	13·0	60	113
cr.	**Naniwa**	3700	300	46	18½	7235	Elswick	1885	1886	..	3	1½ shield	2 *10·2-in.* (A.), 6 *6-in.*, 2 *3-pr.*, 10 M.	4	18·72 *t*	800	350
”	**Niitaka**	3365	235½	44	16½	10,000 Nic.	Yokosuka	1902	1905	..	2½	..	6 *6-in.*, 10 *3-in.*, 4 *2½-pr.*	..	20·0	600	..

cr.	**Otawa** . . .	3000	341	42½	17	10,000 My.	Yokosuka . .	1903	1904	..	..	..	2 *6-in.*, 6 *4·7-in.*, 4 *12-pr.* 2 M., 2 l.	..	20·0	$\frac{600}{875}$	..
t.g.b.	**Shikinami** . . . (*ex* Gaidamak)	400	192½	24¼	7½	3000	Abo, Finland .	1893	1894	..	..	..	2 *1·8-in.*, 7 *1·4-in.*, 10 M. .	3	22·0	90	87
cr.	**Soya** . . . (*ex* Varyag)	6500	420	52	20⅜	20,000 My.	Philadelphia .	1899	1900	..	3	..	12 *6-in.*, 12 *12-pr.*, 6 *3-pr.* .	6 (2sub.)	23·0	$\frac{770}{1250}$	571
”	**Suma** . . .	2657	306¾	40	16¼	8500	Yokosuka . .	1896	1898	237,000	2 shield	4½ 4 M.	2 *6-in.*, 6 *4·7-in.*, 12 *3-pr.*.	2	20·0	200	..
”	**Sutsuya** . . . (*ex* Novik)	3080	347	41½	16	18,000 My.	Danzig (Schichau)	1900	1902	..	2	..	2 *6-in.*, 4 *4·7-in.* . . .	6	25·0	600	..
”	**Takao** . . .	1774	230	33	13	2330	Yokosuka . .	1888	1889	..	..	..	4 *6-in.*, 1 *4¾-in.* do., 6 M. .	..	15·0	300	255
”	**Takachiho** . .	3700	300	46	18½	7500	Elswick . .	1885	1886	..	3	1½ shield	2 *10·2-in.* (A.), 6 *6-in.*, 2 *3-pr.*, 10 M.	4	18·7 *t*	800	365
t.g.b.	**Tatsuta** . . .	875	240	27½	13	5500	Elswick . .	1894	1894	..	..	..	2 *4·7-in.*, 4 *3-pr.*. . .	5	21·0	200	..
cr.	Tone . . . **X*** . . .	4035	400	48½	16¾	15,000 My.	Sasebo . .	1906	..	..	..	..	2 *6-in.*, 12 *4·7-in.*, 2 *12-pr.* .	..	23·0	..	392
”	**Tsugaru** . . . (*ex* Pallada)	6630	413¼	55¾	21	11,610 My.	St. Petersburg (Galerny)	1899	1902	..	2½	..	6 *6-in.*, 20 *12-pr.*, 8 *1-pr.* .	4	20·0	$\frac{900}{1400}$	422
”	**Tsukushi** . . .	1350	210	32	15	2887	Elswick . .	1882	1893	..	..	..	2 *10-in.* (A.), 4 *4·7-in.*, 2 l., 4 M.	2	16·5 *t*	250	190
”	**Tsushima** . . .	3365	235½	44	16½	10,000 Nic.	Kure . .	1902	..	..	2½	..	6 *6-in.*, 10 *3-in.*, 4 *2½-pr.* .	..	20·0	600	..
g.b.	**Uji**	620	180	27¾	10	1000 B.	Kure . .	1903	..	..	..	..	4 *12-pr.*, 3 M. . . .	..	13·0	100	..
cr.	**Yayeyama** . . .	1600	315	34½	15	6000 Nic.	Yokosuka . .	1889	1890	..	..	..	3 *4·7-in.*, 6 M. . . .	2	20·0	..	200
”	**Yamato** . . .	1476	206¾	36	15	1600	Yokosuka . .	1885	1886	..	..	..	2 *6·6-in.* (K.), 5 *4·7-in.*, 4 M.	2	13·0	..	242
Scout	**Yodogava** . . .	1230	300	32	9¾	6500	Sasebo . .	1906	..	..	..	..	2 *4·7-in.*, 4 *12-pr.* . .	..	22·0	..	..

The gunboats Chen-Pei, Chen Pien, Chen Nan, Chen Hsi, Chen Chung and Chen Tung (440 tons) were captured from the Chinese.
Amakusa, mining vessel (*ex* Amur).
* Reported laid down 1906.

NETHERLANDS.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots	tons.	
c.d.s.t.	**De Ruyter** . .	5014	316¾	51½	21¾	6377 *t.*	Amsterdam .	1900	1904	347,500	6–4 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 10 *2·9-in.*, 4 *1·4-in.*	3 2 sub.	16·5 *t*	680	**444**
,,	**Evertsen** . . .	3464	282¾	47	16¾	4735	Flushing .	1894	1896	..	6–4 H.S.	2	..	..	9½ H.S.	3 H.S.	3 *8·2-in.*, 2 *5·9-in.*, 6 *2·9-in.*, 8 *1·4-in.*	3	16·0	280	**268**
,,	**Hertog Hendrik** .	5014	316¾	51½	21¾	6000 Y.	Amsterdam .	1902	1903	347,500	6 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 10 *2·9-in.*. 4 *1·4-in.*, 2 l.	3	16·5	680	**444**
t. & b.	**Jacob van Heemskerck**	5211	316¾	51½	21¾	6000 Y	Amsterdam	1906	..	347,500	6–4 H.N.S.	2	..	..	10 H.N.S.	..	2 *9·4-in.*, 6 *5·9-in.*, 6 *2·9-in.*, 4 *1·4-in.*, 2 l.	3 2 sub	16·0	680	**441**
c.d.s.t.	**Koningin Regentes**	5014	316¾	51½	21¾	7290 Y.	Amsterdam .	1900	1902	347,500	6–4 H.N.S.	2	..	..	10 H.N.S.	..	2 *9·4-in.*, 4 *5·9-in.*, 6 *2·9-in.*, 4 *1·4-in.*, 2 l.	3 2 sub.	16·5	680	**444**
t. & b.	**Koningin Wilhelmina der Nederlanden** . shd.	4527	327½	48¾	20	4600	Amsterdam .	1892	1894	..	..	3	..		11	..	1 *11-in.*, 1 *8·2-in.*, 2 *6·6 in.*, 2 *6·6-in.*, 4 *2·9-in.*, 4 *1·4-in.*, 6 *1·4-in.*, 2 M.	4	16·5	448	**293**
c.d.s.t.	**Kortenaer** . .	3464	282¾	47	16¾	4658	Amsterdam .	1894	1896	..	6 H.S.	2	..	..	9½ H.S.	3 H.S.	3 *8·2-in.*, 2 *5·9-in.*, 6 *2·9-in.*, 8 *1·4-in.*	3	16·0	280	**260**
t. & b.	**Marten Tromp** .	5211	316¾	51½	21¾	6377 *t*	Amsterdam .	1904	1906	347,500	6–4 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	2 *9·4-in.*, 4 *5·9-in.*, 10 *2·9-in.*, 4 *1·4-in.*	3 2 sub.	16·5 *t*	680	**444**
,,	**Piet-Hein** . .	3464	282¾	47	16¾	4736 *t*	Rotterdam .	1894	1896	..	6 H.S.	2	..	..	9½ H.S.	3 H.S.	3 *8·2-in.*, 2 *5·9-in.*, 6 *2·9-in.*, 8 *1·4-in.*	3	16·2 *t*	280	**260**
,,	**Reinier Claeszen** .	2440	229½	44¼	15	350	Amsterdam .	1891	1892	..	4¾–2 *comp.*	3	..	..	11 *comp.*	6 *comp. shield*	1 *8·2-in.* (K.), 1 *6·6-in.*, 1 *2·9-in.*, 4 *1 9-in.*, 3 *1·4-in.*	2	12·5 *t*	88	**160**

Two coast defence vessels of 850 tons and three monitors of 680 tons, projected.

Coast defence monitors (launched 1868–78) Schorpioen, Stier, Matador, Draak, Luipaard, Wesp, Haai, Hyena, Panter, Bloedhond, Cerberus, Krokodil and **Heiligerlee, 2200 tons to 1500 tons.**

NETHERLANDS.—Cruising Ships.

((I) denotes vessels of the Dutch Indian Navy.)

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	inches.	inches.			knots.	tons.	
g. v. . .	Assahan (I) . .	787	179	30¾	11½	1353	Rotterdam .	1900	1900	..	..	.	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.* .	..	13·0	120	95
,, . .	Borneo (I) . . shd.	787	179½	31	13¼	1040	Glasgow .	1892	1893	..	..	..	6 4·1-*in.*, 1 2·9-*in.*, 2 1·4-*in.*, 2 M	..	13·0	124	106
,, . .	Edi (I)	787	179½	30¾	11¾	1100	Flushing .	1897	1898	..	..	..	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.* .	..	13·0	113	95
cr. . .	Friesland . .	3847	307	49	17¾	10,000 Y.	Rotterdam .	1896	1898	285,700	2	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 8 1·4-*in.*, 4 smaller.	4	19·8 *t*	400	333
,, .	Gelderland . . .	3969	310¾	49	17¾	10,000 Y.	Feijenoord .	1898	1900	..	2¼	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 4 1·4-*in.*, 4 M.	4	20·0	850	333
,, . .	Holland . . .	3847	307	49	17¾	10,000 Y.	Amsterdam .	1896	1898	285,700	2	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 8 1·4-*in.*, 4 M.	4	19·6 *t*	400	333
,, . .	Koetei (I) . . .	778	179	30¾	11½	1412	Amsterdam .	1898	1899	..	..	..	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.* .	..	13·0	120	97
,, . .	Lombok (I) . . shd.	591	176	27¼	11	990	Amsterdam .	1891	1892	..	..	..	3 4·7-*in.*, 1 2·9-*in.*, 2 3-*pr.* .	..	12·0	55	84
,, . .	Mataram (I) . .	797	179½	30¾	11¾	1100	Amsterdam .	1896	1897	..	..	..	3 4·7-*in.*, 2 3-*in.*, 2 1·4-*in.* .	..	13·0	113	95
,, ...	Nias (I) . . .	797	179½	30¾	11¾	1227	Amsterdam (Huygens)	1895	1896	..	..	..	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.* . .	..	13·0	120	95

NETHERLANDS.—Cruising Ships—*continued.*

((I) denotes vessels of the Dutch Indian Navy.)

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
cr.	**Noord-Brabant**	3969	310¾	49	17¾	10,000	Flushing	1899	1901	..	2¼	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 4 1·4-*in.*, 4 M.	4	20·0	850	333
„	**Serdang (I)**	797	179½	30¾	11¾	Y. 1100	Flushing	1897	1898	..	..	..	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.*	..	13·0	113	95
g.v.	**Siboga (I)**	778	179	30¾	11½	1395	Amsterdam	1898	1899	..	..	..	3 4·7-*in.*, 2 2·9-*in.*, 4 1·4-*in.*	..	13·0	120	95
cr.	**Sumatra (I)**	1693	229½	37	14	3750	Amsterdam	1890	1892	..	1½	..	1 8·2-*in.*, 1 5·9-*in.*, 2 4·7-*in.*, 1 2·9-*in.*, 4 3-*pr.*, 2 M.	..	17·0	225	183
g.v.	**Sumbawa (I)**	591	176	26½	11¼	930	Flushing	1891	1892	..	..	..	3 4·7-*in.*, 1 2·9-*in.*, 2 3-*pr.*	..	12·5 *t*	60	84
cr.	**Utrecht**	3969	310¾	49	17¾	10,000	Amsterdam	1898	1900	..	2¼	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 4 1·4-*in.*, 4 M.	4	20·0	850	333
„	**Zeeland**	3847	307	49	17¾	10,589 Y. *t*	Flushing	1897	1898	285,700	2	..	2 5·9-*in.*, 6 4·7-*in.*, 4 2·9-*in.*, 8 1·4-*in.*, 4 M.	4	19·4 *t*	400	333

Gun-vessels of the Indian Navy: Arend, Flamingo, Raaf, Reiger, Zeeduif, Zwaan, Pelikaan, Condor, Gier, Zeemeeuw, Zwaluw (400 tons), launched between 1880 and 1891; **Java (1279 tons), 1885; Ceram and Flores (541 tons), 1887; Glatik (417 tons), 1894; Havik, Snip, Sperwer, Kwartel, Favant, and Valk between 1894 and 1903; Argus and Cycloop (438 tons), 1893.**

NORWAY.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.			in.	in.			knots.	tons.	
c.d.s.	**Eidsvold** . **Norge** .	3847	290	50½	16½	4500 Y.	Elswick	1900	1901	350,000	6 H.N.S.	2	..	..	6 H.N.S.	6 H.N.S.	2 *8·2-in.*, 6 *5·9-in.*, 8 *12-pr.*, 6 *3-pr.*	2 sub.	16·5 *t*	400 600	261
„	**Harald Haarfagre** . .	3556	280	48½	16½	3700	Elswick	1896	1898	300,000	7 H.S.	2	..	..	8 H.S.	..	2 *8-in.*, 6 *4·7-in.*, 6 *12-pr.*, 6 *1½-pr.*	2 sub.	17·2 *t*	200 500	248
„	**Torkenskjold**							1897	1899												

Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
g.b.	**Æger** . . .	387	108½	29½	8	450	Horten .	1892	1893	..	1½	..	1 *8·2-in.*, 1 *2·7-in.*, 2 *1·9-in.* . .	..	9·0	..	43
g.v.	**Ellida** . .	984	187	32¾	14¼	900	Horten .	1880	1881	..	..	..	5 *5·9-in. 4-ton* (K.), 1 *4·7-in.*, 1 l., 2 M. .	1	12·0	97	128
„	**Frithjof** . .	1349	216½	32¾	13¼	300	Horten .	1896	1898	..	..	..	2 *4·7-in.*, 4 *2·9-in.*, 4 *1·4-in.*, 2 l. . .	3 1 sub.	15·0	120	156
„	**Heimdal** . .	620	167¼	26¾	11¾	700	Christiania .	1892	1893	..	..	..	4 *2·5-in.*	..	12·0	92	62-
to.g.b.	**Valkyrien** . .	374	190	24¼	9¼	3300 †	Elbing .	1896	1897	..	..	..	2 *2·7-in.*, 1 M.	2	23·2 *t*	90	57
g.v.	**Viking** . .	1095	203½	30½	13	2000	Horten .	1891	1892	..	1½	..	2 *5·9-in.* (A.), 4 *2·5-in.*, 4 *1·4-in.*, 2 M. .	3	15·0	140	156

Eleven Gunboats, of 189 to 280 tons, and of 180 to 450 I.H.P., armed with one large gun and machine guns in each.

PORTUGAL.—Armoured Ship.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots	tons.	
b.	**Vasco da Gama** .	2972	233	40	18¼	6000 W.T.	Blackwall Leghorn .	1876 1903	1878	132,000	9¾–4	3	6 K.S.	..	7¾ K.S.	..	2 *8-in.*, 4 *4·7-in.*, 2 *2·5-in.*, 2 *1-pr.*, 4 M.	2 (sub.)	15·5 *t*	300	218

The Vasco da Gama has been reconstructed by Messrs. Orlando at Leghorn; she has been lengthened 23 ft., rearmed and reboilered.

Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Normal Coal Supply.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
cr. . .	**Adamastor** .	1962	250	35	14	4000	Leghorn .	1896	1897	..	3	5	2 *5·9-in.*, 4 *4·7-in.*, 4 *2·2-in.*, 4 M.	3	18·0 *t*	270	232
corv. . .	**Affonso de Albuquerque**	1111	203	33	13½	1360	Blackwall .	1884	1885	56,500	..	..	2 *6-in.* (A.), 5 *4·7-in.*, 2 *2·5-in.*, 2 M.	..	13·3 *t*	140	183
” . .	**Diu** . . .	717	147	27½	13	700	Lisbon . .	1889	1891	..	..	..	1 *5·9-in.* (K.), 2 *4·7-in.*, 1 *3-pr.*, 2 M.	..	12·0	80	114
cr. . .	**Dom Carlos I.** .	4100	360	46½	17½	12,500 Y.	Elswick .	1898	1899	..	4	..	4 *5·9-in.* (A.), 8 *4·7-in.*, 12 *3-pr.*, 6 *1-pr.*, 4 M.	5 (3 sub.)	22·0	1000	260
g.v. . .	**Dom Luiz I.**	710	151	27¼	13¾	512	Lisbon . .	1895	1896	..	..	..	4 *4·1-in.*, 3 *2·5-in.*, 3 M. .	..	9·9	100	..

g.v. . .	**Liberal** . .	580	140	25½	10½	580	Birkenhead .	1884	1886	32,500	..	..	1 *6-in.* *4-ton* (A.), 3 *4-in.*, 2 M.	..	11·0	90	109
„ . .	**Patria** . .	620	196¾	27½	8½	1800	Lisbon .	1903	..	..	..	..	4 *4-in.*, 6 *1·8-in.* . .	..	15·0	..	..
cr . .	**Rainha Amelia**	1640	246	36	14¾	5000 Nor.	Lisbon .	1899	1901	..	1	..	4 *5·9-in.*, 2 *3·9-in.*, 2 *3-pr.*, 4 M.	2	20·6 *t*	..	250
„ . .	**São Gabriel** **São Rafael**	1772	246	35½	14¼*	4000 N.S.	Havre .	1898	1899	..	1½	..	2 *5·9-in.* (*Canet*), 4 *4·7-in.*, 8 *1·8-in.*, 2 M.	1	17·5 *t*	500	200
to.g.b. .	**Tejo** . . .	522	229½	23	..	7000	Lisbon .	1901	1902	..	..	..	1 *3-in.*, 6 *1·8-in.* . .	3	25·0	..	85
g.b. . .	**Zaire** . . .	580	140	25½	10½	580	Birkenhead .	1884	1885	32,500	.	..	1 *6-in.* (A.), 3 *4-in.*, 2 M.	..	11·0	90	109
„ . .	**Zambeze** . .	627	143	25¾	12	500	Lisbon .	1886	1887	..	..	..	1 *6-in.* (A.), 2 *4-in.*, 2 M. .	..	10·0	85	107

* Mean draught.

Eighteen small gunboats and about 29 light-draught steel river-gunboats. Two gunboats of 220 tons, the Al. Baptista de Andrade and Thomaz Andrea for Mozambique and Timor.

RUSSIA.—Armoured Ships.

(B.S., Black Sea Fleet.)

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Normal Coal Supply.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkheads.	Gun Position.		Guns. B.L.R. are of Russian Krupp pattern.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Admiral Makaroff** .	7900	443	75¾	23	16,500 B.	La Seyne .	1906	..		6¾–4 K.S.	2	3 K.S.	6¾ K.S.	5¾ K.S.	3 K.S.	2 *8-in.*, 8 *6-in.*, 20 *12-pr.*, 4 *6-pr.*	5 sub.	21·0	750 1020	573
b.	**Alexander II** . shd.	9244	326	67	23	8000	St. Petersburg.	1887	1890	..	14–6 *comp.*	2½	..	6 *comp.*	10 *comp.*	6 *comp.*	2 *12-in.*, 4 *9-in.*, 8 *6-in.*, 4 *6-pr.*, 4 *3-pr.*, 6 M.	5	16·5 *t*	1200	604
b.	**Andrei Pervozvannyi**	16,630	429¾	79¾	28½	18,000 B.	St. Petersburg. (Galerny)	1906	..	1,170,000	11–6 K.S.	2½	..	..	12 K.S.	7 K.S.	4 *12-in.*, 12 *8-in.*, 20 *12-pr.*, 20 *3-pr.*, 6 *1-pr.*, 8 M. 2 l.	6 2 sub.	18·0	1500	..
a.c.	**Bayan** . . .	7900	443	75¾	23	16,500 B.	St. Petersburg (New Admiralty)	Bldg.	..	..	6¾–4 K.S.	2	3 K.S.	6¾ K.S.	5¾ K.S.	3 K.S.	2 *8-in.*, 8 *6-in.*, 20 *12-pr.*, 4 *6-pr.*	5 sub.	21·0	750 1020	573
b.	**Catherine II., B.S.** .	10,180	331	69	26½	10,600 B.	Nicolaieff .	1886	1889	900,000	18-10 *comp.*	3	14 *comp.*	..	14 *comp.*	..	6 *12-in.*, 7 *6-in.*, 8 *6-pr.*, 6 M.	7	15·5 *t*	886	325
b.	**Cesarevitch** . .	12,912	388¾	76¼	26	16,300 B.	La Seyne .	1901	1902	..	9¾–4 K.S.	2½	6 K.S.	9 K.S.	10–11 K.S.	6¾ K.S.	4 *12-in.*, 12 *6-in.*, 20 *3-in.*, 20 *1·8-in.*, 6 *1·4-in.* 4 M., 2 l.	4 2 sub.	19·6 *t*	900 1350	732
t.	**Dvenadzat Apostoloff (Twelve Apostles), B.S.**	8433	330	60	25½	11,500	Nicolaieff .	1890	1892	..	14-6 *comp.*	2½	10 *comp.*	12 *comp.*	12 *comp.*	5 *comp.*	4 *12-in.*, 4 *6-in.*, 8 *3-pr.*, 10 M.	6	16·6 *t*	800	500
b.	**Evstafi, B.S.** . .	12,733	372¼	72¾	27	10,600 B.	Nicolaieff .	1906		..	9–3 K.S.	2½	6 K.S.	7–5 K.S.	10 K.S.	5 K.S.	4 *12-in.*, 16 *6-in.*, 14 *3-in.*, 8 *1·8-in.*, 2 *1·4-in.*, 6 M., 2 l.	5	16	670 1400	731
b.	**Georgi Pobiedonosetz B.S.**	10,280	320	69	26½	10,600 13,468 *t*	Sebastopol .	1892	1896	*431,000	16–11	..	12	..	12	..	6 *12-in.*, 7 *6-in.*, 8 *3·9-in.*, 6 M.	7	16·5 *t*	700	500
a.c.	**Gromoboi** . . shd.	12,336	473	68½	26	14,500	St. Petersburg (Baltic)	1899	1900	..	6 H.S.	3	4¾ H.S.	6 H.S.	6 H.S.	4¾ H.S.	4 *8-in.*, 16 *6-in.*, 6 *4·7-in.*, 20 *3-in.*, 36 small Q.F. and M.	4 4 sub.	20·0	2500	814
a.g.b.	**Grozjastchy** . .	1492	229	41¾	11	2000 B.	St. Petersburg	1890	1891	..	5	1½	..	3½	..	..	1 *9-in.*, 1 *6-in.*, 8 Q.F.	2	15·0	100	120

b.	**Ioann Zlatoust**, B.S. .	12,733	372¼	72¾	27	10,600 B.	Sebastopol	1906	..	..	9–3 K.S.	2½	6 K.S.	7–5 K.S.	12–10 K.S.	5 K.S.	4 *12-in.*, 16 *6-in.*, 14 *3-in.*, 8 *1·8-in.*, 2 *1·4-in.*, 6 M., 2 l.	5	16·0	670† 1400	636
a.g.b.	**Khrabry** . . .	1492	229	41¾	11	3000 Nic.	St. Petersburg (New Admiralty)	1895	1896	..	5	1½	..	3½	..	..	1 *9-in.*, 1 *6-in.*, 8 Q.F.	2	15·0	100	120
a.c.	**Pallada** . . .	7900	443	75¾	23	16,500 B.	St. Petersburg (New Admiralty)	1906	..	..	6¾–4 K.S.	2	3 K.S.	6¾ K.S.	5¾ K.S.	3 K.S.	2 *8-in.*, 8 *6-in.*, 20 *12-pr.*, 4 *6-pr.*	5 sub.	21·0	750 1020	573
2nd cl. *cr*	**Pamyat Azova** shd. .	6734	377	51	23	8000 B.	St. Petersburg	1888	1890	350,000	9 *comp.*	2½	..	8 *comp.*	8 *comp.*	..	2 *8-in.*, 13 *6-in.*, 14 Q.F., and 3 M.	3	18·8 *t*	1000	525
b.	**Panteleimon**, B.S. (*ex* Potemkine)	12,480	372¼	72¾	27	10,600 B.	Nicolaieff .	1900	1902	..	9-3 K.S.	2½	6 K.S.	7–5 K.S.	12–10 K.S.	5 K.S.	4 *12-in.*, 16 *6-in.*, 14 *3-in.*, 6 *1·8-in.*, 14 *1·4-in.*, 6 M., 2 l.	5 sub.	17·0	670†	636
b.	**Pavel I** (Imperator) .	16,630	429¾	79¾	28½	18,000 B.	St. Petersburg (Baltic)	Bldg.	..	1,170,000	11-6 K.S.	..	..	..	12 K.S.	7 K.S.	4 *12-in.*, 12 *8-in.*, 20 *12-pr.*, 20 *3-pr.*, 6 *1-pr.*, 8 M., 2 l.	6 2 sub.	18·0	1500	..
a.c.	**Rossia** . . shd.	12,130	480	68½	26	14,500 B.	St. Petersburg	1896	1898	..	10–5 H.S.	2½	4 H.S.	6 H.S.	2 H.S.	2 H.S.	4 *8-in.*, 16 *6-in.*, 12 *3-in.*, 36 small Q.F. & M.	5	20·0	2500 §	725
b.	**Rostislav**, B.S. . .	8880	341	66½	24	8500	Nicolaieff .	1896	1899	..	15¾–8 H.S.	2-3	5 H.S.	5 H.S.	15¾ H.S.	6 H.S.	4 *10-in.*, 8 *5·9-in.* (Canet), 12 *1·8-in.*, 4 *1·5-in.*, 2 M.	6	16·0	§550 800	624
a.c.	**Rurik** ‖ . . .	15,000	490	75	26	19,700 B.	Barrow . .	1906	..	..	6–3 K.S.	1½	3 K.S.	3 K.S.	8 K.S.	7 K.S.	4 *10-in.*, 8 *8-in.*, 20 *4·7-in.*, 18 smaller.	2 sub.	21·0	1200 2000	800
b.	**Sinope**, B.S. . .	10,180	331	69	26½	13,000 B.	Sebastopol .	1887	1890	900,000	16–11 *comp.*	3	14 *comp.*	12	14 *comp.*	..	6 *12-in.*, 7 *6-in.*, 8 Q.F., 6 M.	7	16·75	886	325
b.	**Slava** . . .	13,516	367½	76	26	16,000 B.	St. Petersburg (Baltic)	1903	1906	..	9–4 K. S.	4	6 K.S.	9 K.S.	10 K.S.	6 K.S.	4 *12-in.*, 12 *6-in.*, 20 *3-in.*, 20 *3-pr.*, 6 *1-pr.*	4 2 sub.	18·0	1250 2000	740
b.	**Tchesmé**, B.S. . .	10,930	331	69	26½	11,000	Sebastopol .	1886	1888	900,000	16 *comp.*	3	14 *comp.*	..	14 *comp.*	..	4 *12-in.*, 10 *6-in.*, 8 Q.F., 6 M.	7	15·0	886	325
b.	**Tria Sviatitelia**, B.S.	13,318	357½	72¼	27	10,600	Nicolaieff .	1893	1896	..	16 H.S.	3	16 H.S.	12 H.S.	16 H.S.	5 H.S.	4 *12-in.*, 8 *6-in.*, 4 *4·7-in.*, 56 smaller Q.F. & M.	6 2 sub.	18·0 *t*	1000	582

---

* Exclusive of armament.

† And liquid fuel, 580 tons.

§ And liquid fuel.

‖ Two projected.

RUSSIA.—Cruising Ships, &c.

(B.S., Black Sea Fleet.)

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	ins.				knots.	tons.	
to.g.b. .	**Abrek** . . .	535	212¼	24¾	9	4506 t	Abo . .	1896	1897	53,600	½	..	2 *3-in.*, 4 *1·8-in.* . .	2	21·2 t	..	..
2nd cl. *cr.* .	**Admiral Korniloff**	5800	351	48½	20	9000	St. Nazaire .	1887 1895	1889	296,000	2½	..	14 *6-in.*, 6 *1·8-in.*, 6 *1·4-in.*, 5 l.	5	17·5 t	1100	425
3rd cl. *cr.* .	**Almaz** . . .	3285	325	43½	17½	7500 B.	St. Petersburg (Baltic)	1903	1903	..	2¾	5-3½ K.S.	6 *4·7-in.*, 8 *1·8-in.*, 2 *1·4-in.*, 3 M.	6	19·0	560	340
2nd cl. *cr.* .	**Askold** . .	5905	426½	49¼	20¾	24,000 T.S	Kiel . . (Germania)	1900	1901	..	3	4	12 *6-in.*, 12 *3-in.*, 8 *1·8-in.*, 2 *1·4-in.*, 2 M.	6 (2 sub.)	23·8 t	720 1100	500
„ .	**Aurora** . . .	6731	413¼	55¾	21	11,610 B.	St. Petersburg (Galerny)	1900	1902	..	2½	..	8 *6-in.*, 20 *3-in.*, 8 *1·4-in.*	3	20·0	900 1400	422
g.b. . .	**Bobr**	875	215¼	35¾	9	800	St. Petersburg (New Admiralty)	1906	..	..	..	..	2 *4·7-in.*, 4 *12-pr.*, 3 M. .	1	12·0	60	170
2nd cl. *cr.* .	**Bogatyr** . . .	6645	416¾	54½	20¾	20,300 Nor.	Stettin . . (Vulcan)	1901	1901	..	2	5 N.S.	12 *6-in.*, 12 *3-in.*, 6 *1·8-in.*, 2 *1·4-in.*, 2 M.	6 (2 sub.)	24·0 t	720 1100	580
to.g.b. .	**Captain Sacken,** B.S.	742	210	24	8¾	3400	Nicolaieff .	1888	1889	40,700	..	..	7 *4·7-in.*, 7 M. . .	3	18·5 t	97	120
g.v. . .	**Chernomoretz,** B.S.	1224	210	35	11	1500 B.	Nicolaieff .	1889	1891	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F. & M.	2	13·5 t	250	161
2nd cl. *cr.* .	**Diana** . . .	6630	413¼	55¾	21	11,610 B.	St. Petersburg (Galerny)	1899	1902	..	2½	..	8 *6-in.*, 20 *3-in.*, 8 *1·4-in.*	3	20·0	900 1400	422
g.v. .	**Donetz,** B.S. .	1224	210	35	11	1500 B.	Nicolaieff .	1887	1888	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F. & M.	2	13·5 t	250	161
g.b. . .	**Gilyak** . . .	875	215¼	35¾	9	800	St. Petersburg (New Admiralty)	1906	..	..	..	..	2 *4·7-in.*, 4 *12-pr.*, 3 M. .	1	12·0	60	170
to.g.b. .	**Griden,** B.S.	400	192½	24¼	7½	3500	Nicolaieff .	1893	1894	66,600	..	..	2 *1·8-in.*, 7 *1·4-in.*, 10 M.	2	22·0	90	60
3rd cl. *cr.* .	**Jemchug** . . .	3106	347¾	41½	16	17,000 Y.	St. Petersburg (Nevsky)	1903	1904	..	2	..	8 *4·7-in.*, 6 *1·8-in.*, 2 *1·4-in.*, 1 M.	3	23·0	600	340
2nd cl. *cr.* .	**Kagul,** B.S. .	6645	439	54½	20½	19,500	Nicolaieff .	1903	1905	..	2¾	5–3½ K.S.	4 *8-in.*, 6 *6-in.*, 12 *3-in.*, 6 *1·8-in.*	2 (2 sub.)	23·0	720	..
to.g.b. .	**Kazarsky,** B.S.	400	190	24	8½	3500	Elbing . .	1890	1891	32,500	..	..	9 *1·8-in.* (Hotchkiss) .	2	23·0	90	60
g.b. . .	**Khivinetz** . .	1340	230	36	10½	1400 B.	St. Petersburg (New Admiralty)	1904	1905	..	..	..	2 *8-in.*, 8 *3-in.*, 4 M. .	..	13·0	..	200
„ . .	**Koreiets** . . .	875	215¼	35¾	9	800	St. Petersburg (New Admiralty)	1906	Bldg	..	..	..	2 *4·7-in.*, 4 *12-pr.*, 3 M. .	1	12·0	60	170

g.v.	**Kubanetz**, B.S.	1224	210	35	11	1500 B.	Sebastopol	1888	1889	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F.	2	13·8 *t*	250	161
to.g.b.	**Lieutenant Ilyin**	714	230	24	8¾	3500	St. Petersburg	1887	1888	40,150	..	..	7 *3-pr.*, 10 M.	5	20·1 *t*	97	120
2nd cl. *cr.*	**Oleg**	6675	439¾	54½	20½	19,500 Nor.	St. Petersburg (New Admiralty)	1903	1904	..	2¾	5–3½	12 *6-in.*, 12 *3-in.*, 6 *1·8-in.*	2 sub.	23·0	600	340
„	**Otchakoff**, B.S.	6645	439	54½	20½	19,500 Nor.	Sebastopol	1902	1905	..	2¾	5–3½ K.S.	12 *6-in.*, 12 *3-in.*, 6 M.	2 sub.	23·0	720 1100	..
3rd cl. *cr.*	**Pamyat Merkuriya**, B.S.	2997	295	41	17	3000	Toulon	1880	1882	..	..	..	6 *6-in.*, 8 Q.F. & M., 4 l.	2	16·0	1100	200
g.b.	**Sivoutch**	875	215¼	35¾	9	800	St. Petersburg (New Admiralty)	1906	Bldg.	..	..	..	2 *4·7-in.*, 4 *12-pr.*, 3 M.	1	12·0	60	170
3rd cl. *cr.*	**Rynda**	3508	265¾	46	16	3000	St. Petersburg	1885	1887	..	1½	..	4 *6-in.*, 9 Q.F., M., & 4 l.	..	14·8 *t*	710	322
corv.	**Strjelok**	1343	206¾	32¾	14	1528	St. Petersburg	1880	1881	..	..	..	3 *6-in.*, 7 Q.F., M., & 4 l.	..	13·0	250	172
g.v.	**Teretz**, B.S.	1224	210	35	11	1500 B.	Sebastopol	1888	1889	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F. & M.	2	13·8 *t*	250	161
„	**Uraletz**, B.S.	1224	210	35	11	1500 B.	Sebastopol	1888	1890	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F. & M	2	13·8 *t*	250	161
cr.	**Vitiaz**	6375	414	52½	20⅝	20,000 B.	St. Petersburg (Galerny)	Bldg.	..	..	2¾	5–3½ K.S.	12 *6-in.*, 12 *3-in.*, 8 *1·8-in.*	5 (2 sub.)	23·0	720	..
to.g.b.	**Voevoda**	400	192½	24¼	7½	3600	Elbing	1892	1893	111,000	..	..	2 *1·8-in.*, 7 *1·4-in.*, 3 M.	2	22·0	90	87
g.v.	**Zaporojetz**	1224	210	35	10	1500	Nicolaieff	1887	1889	40,000	..	..	2 *8-in.*, 1 *6-in.*, 7 Q.F. & M.	2	13·5 *t*	250	161

Okean, *coal transport*, 12.000 tons, 18 knots, launched at Kiel, 1901. Torpedo transports and mining vessels Volga and Bakan. Mining vessels Yenessei and Amour in hand at St. Petersburg.

Auxiliary Steamers.

Class.	NAME.	Material of Hull.	Displacement.	Length.		Beam.		Draught.		Propellers.	Indicated Horse-Power.	Where Built.	Date of Launch.	Speed.
	BLACK SEA CO.		tons.	ft.	n.	ft.	in.	ft.	in.					
Transport Cruisers	**Czar**	S.	2340	319	0	37	0	23	6	1	350 nom.	Newcastle	1883	14
„	**Czarevna**	„	2340	319	0	37	0	23	6	1	350 nom.	„	1883	14
„	**Czaritza**	„	2340	319	0	37	0	23	6	1	350 nom.	„	1883	14
„	**Grand Duke Alexis**	„	2350	284	0	37	0	14	9	1	3500	Hebburn	1890	16
„	**Grand Duke Constantine**	„	2400	284	0	37	0	15	0	1	3500	„	1891	16
„	**Roumantzeff**	„	760	212	0	28	0	7	6	2	1000	„	1894	13
	(and many others)													
	VOLUNTEER FLEET.													
cr.	**Kiev**	„	10,500	440	0	49	6	24	0	2	3200	Clydebank	1895	13
„	**Nijni Novgorod**	„	7876	325	0	40	0	23	6	1	2000	Elswick	1891	11½
„	**Saratoff**	„	8556	462	0	50	0	24	0	2	10,000	Glasgow	1892	19
„	**Tamboff**	„	8640	385	0	45	0	24	6	1	2,500	Dumbarton	1893	12¾
„	**Vladimir**	„	10,500	440	0	49	6	24	0	2	3,200	„	1895	12
„	**Voronej**	„	10,500	440	0	49	6	24	0	2	3,200	„	1895	12
„	**Yaroslav**	„	8640	385	0	45	0	24	6	1	2,500	„	1893	12¾

Lena (ex Kherson), 10,225 tons, Rion (ex Smolensk), 11,850 tons, and Dnieper (ex Petersburg), 9252 tons, transport vessels taken over from the Volunteer Fleet and renamed. Auxiliary steamers Don (ex Fürst Bismarck), Kuban (ex Auguste Victoria), Terek (ex Kaiserin Maria Theresia).

SPAIN.—Armoured Ships.

Class	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**Cataluña**	6889	347¾	61	21¾	15,000	Cartagena	1900	..	600,000	12-10	2	..	12	10½	..	2 *11-in.*, 10 *5·5-in.*, 2 *2·7-in.*, 4 *2·2-in.*, 4 *1·4-in.*, 2 M.	5 sub.	20·0	1200	484
"	**Emperador Carlos V**	9089	380	67	25	18,500	Cadiz (Vea Murguia)	1895	1898	734,000	2	6½–2	2	..	10	2	2 *11-in.* (Hontoria), 8 *5·5-in.*, 4 *3·9-in.*, 2 *2·7-in.*, 4 *2·2-in.*, 6 M.	6	20·0	1200	535
br.	**Numancia**	7190	314¾	55¾	25¼	3708	La Seyne	1863 1897	1865	315,600	5½	..	4¾	..	5	4¾	4 *8-in.*, 4 *6·2-in.*, 10 *5·9-in.*	2	8·0	1100	600
b.	**Pelayo**	9744	330	66	25	9000 Nic.	La Seyne	1887 1897	1890	..	17¾	4	..	..	19¼	4 H.S.	2 *12·5-in.*, 2 *11-in.*, 9 *5·5-in.*, 6 smaller, 12 M.	7	16·0	800	600
a.c.	**Princesa de Asturias**	6889	347¾	61	21¾	15,000	Carraca	1896	..	600,000	12–10	2	..	12	10½	..	2 *11-in.*, 10 *5·5-in.*, 2 *2·7-in.*, 4 *2·2-in.*, 4 *1·4-in.*, 2 M.	5	20·0	1200	500

Three coast defence ships projected.

SPAIN.—Cruising Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	ins.				knots.	tons.	
to.g.b.	**Don Alvaro de Bazán**	810	233	26¾	22	2500	Ferrol	1897	1899	..	..	..	2 *4·7-in.* (Hontoria), 4 *1·6-in.*, 2 M.	4	19·0	..	110
,,	**Doña María de Molina**	810	233	26¾	22	2500	Ferrol	1896	1898								
,,	**Destructor**	458	192½	25	7	3800	Clydebank	1887	1888	..	..	..	1 *3·5-in.*, 4 *6-pr.*, 4 M.	3	22·56 *t*	104	55
cr.	**Extremadura**	2030	290	36	14	7000 T	Cadiz	1900	1902	..	2	..	8 *4-in.* (Vickers), 4 *2·2-in.*, 2 *1·4-in.*, 1 l.	..	20·0	..	..
,,	**Lepanto**	4750	318½	50½	20	12,000	Cartagena	1892	1895	..	4¾	..	4 *7·8-in.* (Hontoria), 6 *4·7-in.*, 6 *6-pr.*, 4 *3-pr.*, 5 M.	5	20·0	1100	276
to.g.b.	**Marqués de la Victoria**	810	233	26¾	22	2500	Ferrol	1897	1900	..	..	..	2 *4·7-in.* (Hontoria), 4 *1·6-in.*, 2 M.	4	19·0	..	110
g.v.	**Marqués de Molíns**	562	190	23	10¼	2600	Ferrol	1891	1893	..	..	..	2 *4·7-in.* (Hontoria), 4 *2·2-in.*, 1 M.	2	12·0	106	80
,,	**Martin Alonso Pinzón**							1892	1893								
,,	**Nueva España**	620	190	23	11¾	2600	Carraca	1889	1890	..	..	..	2 *4·7-in.* (Hontoria), 4 *2·2-in.*	2	14·0	106	91
cr.	**Reina Regente**	5287	337	529	19¾	6500 W.T.	Ferrol	1906	..	..	..	3	10 *5·5-in.*, 12 *2·2-in.*, 2 l., 8 M.	3	20·0	..	..
,,	**Rio de la Plata** shd.	1773	246	35¼	15	7100 N.S.	Havre	1898	1899	..	..	1	2 *5·5-in.*, 4 *3·9-in.*, 4 *2·2-in.*, 6 M.	2	20·0	270	213
g.v.	**Temerario**	562	190	23	10¼	2600	..	1889	1890	..	..	..	2 *4·7-in.* (Hontoria), 4 *2·2-in.*, 1 M.	2	15·0	106	82
,,	**Vincente Yáñez Pinzón**	562	190	23	10¼	2600	Ferrol	1891	1892	..	..	..	2 *4·7-in.* (Hontoria), 4 *2·2-in.*, 1 M.	2	12·0	106	80

Hernán Cortés, Vasco Nuñez de Balboa, Ponce de Léon, MacMahon, Perla, gunboats.

SWEDEN.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c.d.s., t.	**Aeran** . .	3612	287	49¼	16½	6500 Y.	Gothenburg	1901	1902	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 2 *1·4-in.*, 2 M.	2 sub.	17·2 *t*	370	250
,,	**Dristigheten** .	3445	285	48½	16	5400 Y.	Gothenburg	1900	1901	..	8 K.S.	1⅞	..	..	8 N.S.	3¾ K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 2 M.	2 sub.	16·5	300	..
a.c.	**Fylgia** . Unnamed .	4100	377¼	48¾	16	12,000 Y.	Stockholm	1905 Bldg.	..	385,700	4 K.S.	2	..	..	4 K.S.	..	8 *5·9-in.*, 14 *2·2-in.* . .	2	21·5	350 900	350
c.d.s., t.	**Göta** . .	3238	258½	48	16¾	4750	Gothenburg	1890 1902	1891	.	11¾–8	2	..	..	7½ H.S.	5 H.S.	2 *10-in.*, 4 *6-in.*, 5 *2·2-in.*, 8 M.	3	16·0	240	150
,,	**Manligheten** .	3612	287	49¼	16½	7400 Y.	Malmö .	1904	..	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 2 *1·4-in.*, 2 M.	2 sub.	17·0	370	250
,,	**Njord** . .	3445	278¼	48½	17½	5350	Gothenburg	1898	1899	..	9½ H.N.S.	1⅞	..	..	9⅞ H.N.S.	3¾ H.N.S.	2 *9·8-in.*, 6 *4·7-in.*, 10 *2·2-in.*, 4 M.	1	16·5	275	200
,,	**Oden** . .	3445	278¼	48½	17½	5330	Stockholm .	1896	1898	..	9½ H.N.S.	1⅞	..	..	9⅞ H.N.S.	3¾ H.N.S.	2 *9·8-in.*, 4 *4·7-in.*, 10 *2·2-in.*, 4 M.	1	16·5	275	200
,,	**Oskar II** .	4203	313¾	49½	16¾	8500 Y.	Gothenburg	1905	..	..	6 K.S.	2	6 K.S.	6 K.S.	7½ K.S.	5 K.S.	2 *8·2-in.*, 8 *5·9-in.*, 10 *2·2-in.*, 2 *1·4-in.*, 2 M.	2 sub	18·0	350 500	326
,,	**Svea** . .	3051	248¼	49¼	17	3640	Gothenburg	1886 1904	1887	..	11¾–8	2	..	..	11½	..	2 *10-in.* (A.), 4 *4·7-in.*, 6 *2·2-in.*, 8 M.	1	14·7 *t*	220	268
,,	**Tapperheten** .	3612	287¼	49¼	16½	6000 Y.	Malmö .	1901	1904	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 2 *1·4-in.*, 2 M.	2 sub.	16·5	370	250
,,	**Thor** . .	3445	278¼	48½	17½	5350	Stockholm .	1898	1890	..	9½ H.N.S.	1⅞	..	..	9⅞ H.N.S.	3¾ H.N.S.	2 *9·8-in.*, 6 *4·7-in.*, 10 *2·2-in.*, 4 M.	1	16·5	275	200
,,	**Thule** . .	3248	260¾	48	16¾	4740	Stockholm .	1892 1904	1894	..	11¾–8	1⅞	..	..	11½	..	2 *10-in.* (A.), 4 *6-in.*, 5 *2·2-in.*, 8 M.	2	16·2 *t*	250	165
,,	**Wasa** . .	3612	287	49¼	16½	6000 Y.	Stockholm .	1901	1893	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·2-in.*, 6 *5·9-in.*, 10 *2·2-in.*, 2 *1·4-in.*, 2 M.	2 sub.	16·5	370	250

The old coast-defence ships John Ericsson, Thordön, and Tirfing, 1500 tons, Loke, 1600 tons, and the armoured gunboats Berserk, Björn, Folke, Gerda, Hildur, Sölve and Ulf, 460 tons. Some of these are being partially modernized.

SWEDEN.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.										knots.	tons.	
to.g.b.	**Claes Horn** . .	787	222	27	10¼	3600	Stockholm .	1899	1900	..	..	..	2 *4·7-in.*, 4 *2·2-in.* . .	1 sub.	20·0	..	100
”	**Claes Uggla** . .	787	232	27¼	8¾	4500 Y.	Stockholm .	1900	1901	..	..	..	2 *4·7-in.*, 4 *2·2-in.* . .	1	20·5	..	100
g.v.	**Edda**	549	183¾	27	10¼	960	Carlskrona .	1885	1886	..	..	..	1 *10·6-in.*, 1 *6-in.*, 2 *1·5-in.*, 2 M.	..	13·6 *t*	80	76
corv.	**Freja**	1968	216	40	19¾	1750	Malmö . .	1885	1887	..	..	..	4 *6-in.*, 8 *4·7-in.*, 4 *1·5-in.*, 2 *2·5-in.*, 5 M. . . .	..	14·1 *t*	180	250
to.g.b.	**Jacob Bagge** .	787	222	27	10½	3970	Malmö . .	1898	1899	..	..	..	2 *4·7-in.*, 4 *2·2-in.* . . .	1 sub.	19·5	..	100
	Örnen . .					4100	Gothenburg .	1896	1897						19·5		
”	**Psilander** . . .	787	232	27¼	8¾	4500 Y.	Stockholm .	1900	1901	..	..	..	2 *4·7-in.*, 4 *2·2-in.* . .	1 sub.	20·5 *t*	..	100
”	**Skäggald** . . .	527	171¼	26	9¾	780	Stockholm .	1879	1880	..	..	..	1 *10·6-in.*, 1 *4·7-in.*, 2 M. .	..	13·2 *t*	80	72
”	**Skuld**	527	171¼	25¼	10¾	780	Carlskrona .	1879	1880	..	..	..	1 *10·6-in.*, 1 *4·7-in.*, 2 M. .	..	13·0	80	72
”	**Verdande** . . .	527	171½	25½	10¼	780	Carlskrona .	1879	1880	..	..	..	1 *10·6-in.*, 1 *4·7-in.*, 2 M. .	..	13·2 *t*	80	72

Four gunboats of 190 to 200 tons, and about 130 I.H.P. each, and carrying 1 5-in. B.L.R. and 2 M.

TURKEY.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.						in.	in.	in.	in.	in.	in			knots.	tons.	
c.b.	**Assar-i-Tewfik*** .	4613	272¼	52½	25	3560	La Seyne .	1868	1870 1906	..	8	..	..	..	6	..	3 *5·9-in.*, 7 *4·7-in.*, 6 *6-pr.* .	..	13·0	400	..
,,	**Hamidieh** . .	6700	292	55¾	24¾	4500	Turkey .	1885	1893	..	9	3	5	..	5	..	10 *10·2-in.* (K.), 2 *6·6-in.*, 6 l., 2 M.	2	13·0	600	..
,,	**Messoudieh** . .	9120	331½	59	25¾	11,000 Nic.	Thames . Genoa	1874 1901	1876	..	12	1	12	..	6–9	12	2 *9·2-in.*, 12 *6-in.*, 14 *3-in.*, 10 *6-pr.*, 2 *3-pr.*, 2 l.	..	17·5 *t*	600	..

* Refitted at Kiel, 1906.

TURKEY.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
cr. .	**Abdul Hamid** . . .	3800	340	47½	16	12,500 Nic.	Elswick .	1903	1904	..	4–1½	..	2 *6-in.*, 8 *4·7-in.*, 6 *1·8-in.*, 6 M.	2	22·2 *t*	600	300
,, .	**Abdul Medjidieh** . .	3432	331¼	42	16	12,000 Nic.	Philadelphia	1903	1904	..	4–1½	..	2 *6-in.*, 8 *4·7-in.*, 6 *1·8-in.*, 6 M.	2	22·2	600	300
,, .	**Heibetnuma** . . .	1960	226	37	14	2500 ind.	Turkey .	1890	1893	..	..	..	3 *5·9-in.* (K.), 6 *4·7-in.*, 6 Q.F.	2	14·0	..	..
g.v. .	**Lutfi-Hamayoun** . .	1818	210	35	14	2800	Turkey .	1892	1894	..	..	..	4 *6-in.* (K.), 6 *4·7-in.*, 6 Q.F.	2	18·0	..	..
to. g.b. .	**Namet**	900	230	31	16½	4500	Gaarden .	1890	1891	..	..	¼	2 *4-in.* (K.), 16 M. . .	2	19·0	..	111
,, .	**Pelenk-i-deria** . .	840	236¼	31	16½	5000	Gaarden .	1890	1891	..	..	¼	2 *4-in.* (K.), 16 M. . .	2	20·0	..	111
g.v. .	**Sedul Bahr** . . .	800	173½	26½	11½	160	Turkey .	1894	1897	..	2	..	4 *4·7-in.* (K.), 6 M. . .	2	12·7	120	..
to. g.b. .	**Shahani-deria** . .	450	200	23	9	3000	Turkey .	1892	1894	..	..	..	2 *4·7-in.* (K.), 6 M. . .	4	22·0	..	..
g.v. .	**Zuhaf**	800	173½	26½	11½	160	Turkey .	1894	1896	..	..	..	4 *4·7-in.* (K.), 6 M. . .	2	12·7	120	..
to. cr. .	2 Unnamed . . .	775	262⅛	27⅛	..	5100	Kiel . . (Germania)	1906	..	..	..	..	2 *4-in.*, 6 *6-pr.*, 2 M., 2 l. .	3	..	..	..

UNITED STATES.—Armoured Ships.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. *	Armour.						Armament.		Speed.	Coal.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
t.	**Alabama** .	. 11,565	368	72¼	26	11,207 *t*	Philadelphia	1898	1900	544,539	16½–4 H.S.	2¾–4	5¼ H.S.	12 H.S.	15 H.S.	6 H.S.	4 *13-in.*, 14 *6-in.*, 12 *6-pr.*, 11 *1-pr.*, 4 M., 2 l.	4	17·0 *t*	800 1275	592
c.d.s., t. (1 t.)	**Arkansas**	. 3235	252	50	12¾	1739 T.	Newport News	1900	1902	197,267	11–5 H.S.	1½	..	..	11 H.S.	..	2 *12-in.*, 4 *4-in.*, 3 *6-pr.*, 6 *1-pr.*, 2 M.	..	12·0 *t*	400	222
a. c.	**Brooklyn** .	. 9215	400½	62	26¼	18,425	Philadelphia	1895	1896	613,583	3 H.S.	6–3	4 H.S.	..	8 H.S.	5½ H.S.	8 *8-in.*, 12 *5-in.*, 12 *6-pr.*, 4 *1-pr.*, 4 M., 2 l.	..	22·2 *t*	900 1622	718
,,	**California**	. 13,680	502	69½	24½	23,000 B. & W.	S. Francisco.	1904	..	756,000	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 (sub.)	22·0	900 2000	829
,,	**Charleston**	. 9700	424	66	25½	27,200 B.&W.	Newport News	1904	1906	563,030	4 H.S.	3	4 H.S.	..	4 H.S.	..	14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 12 *1-pr.*, 10 M., 2 l.	..	22·0	650 1500	664
,,	**Colorado** .	. 13,680	502	69½	24½	26,837 Nic.	Philadelphia	1903	1905	756,000	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 (sub.)	22·2 *t*	900 2000	829
t.	**Connecticut**	. 16,000	450	76¾	26¾	16,500 B. & W.	New York .	1904	1906	819,300	11½ K.S.	3	8 K.S.	7 K.S.	10 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 20 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 (sub.)	18·8 *t*	0 2206	803
c.d.s., t. (1 t.)	**Florida** .	. 3235	252	50	12¾	2336 Nor.	Elizabethport	1901	1903	190,075	11–5 H.S.	1½	..	..	11 H.S.	..	2 *12-in.*, 4 *4-in.*, 3 *6-pr.*, 6 *1-pr.*, 2 M.	..	12·4 *t*	355	222
Super-posed turrets.	**Georgia** .	. 14,948	435	76¼	23¾ †	19,000 Nic.	Bath, Me. .	1904	1906	737,700	11–4 K.S.	3	6 K.S.	6 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 12 *6-in.*, 12 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 (sub.)	19·2 *t*	900 1704	812
b.	**Idaho** .	. 13,000	375	77	25	10,000 B. & W.	Philadelphia	1905	..	616,360	9–4 K.S.	..	7 K.S.	7 K.S.	12–8 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 8 *7-in.*, 12 *3-in.*, 6 *3-pr.*, 4 *1-pr.*, 8 M., 2 l.	2 (sub.)	17·0	600 1750	725
t.	**Illinois** .	. 11,565	368	72¼	26	12,757	Newport News	1898	1901	533,237	16½–4 H.S.	2¾–4	5¼ H.S.	12 H.S.	15 H.S.	6 H.S.	4 *13-in.*, 14 *6-in.*, 16 *6-pr.*, 6 *1-pr.*, 4 M., 2 l.	4	17·45 *t*	800 1275	686
b.	**Indiana** .	. 10,288	348	69¼	27¼	9,607 B. & W.	Philadelphia	1893	1895	620,569	18 H.S.	2¾	5 H.S.	17 H.S.	17 H.S.	10 H.S.	4 *13-in.*, 8 *8-in.*, 4 *6-in.*, 20 *6-pr.*, 6 *1-pr.*, 2 M., 1 c.	2	15·5 *t*	400 1567	497
,,	**Iowa** .	. 11,340	360	72¼	26¾	11,933	Philadelphia	1896	1897	618,514	14 H.S.	2¾	5 H.S.	12 H.S.	15 H.S.	8–6 H.S.	4 *12-in.*, 8 *8-in.*, 6 *4-in.*, 20 *6-pr.*, 4 *1-pr.*, 4 M., 2 l.	4 (sub.)	17·1 *t*	625 1795	520
t.	**Kansas** .	. 16,000	450	77	26¾	16,500 B. & W.	Camden, N.J.	1905	1906	855,850	8–11 K.S.	3–4½	8 K.S.	7 K.S.	10 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 20 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4	18·1 *t*	900 2200	854

er- osed *turrets*	**Kearsarge** **Kentucky**	11,540	368	72¼	25¾	11,788 12,179	Newport News	1898	1900	462,345 each	16½–4 H.S.	2¾–5	5½ H.S.	..	15 H.S.	9 H.S.	4 *13-in.*, 4 *8-in.*, 14 *5-in.*, 20 *6-pr.*, 8 *1-pr.*, 4 M., 2 l.	4	16·8 16·9 *t*	410 1591	690 686
t.	**Louisiana**	16,000	450	76⅞	26¾	20,500 B. & W.	Newport News.	1904	1906	819,300	11–8 K.S.	3	8 K.S.	7 K.S.	10 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 20 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 L.	4	18·8 *t*	900 2200	803
”	**Maine**	12,300	388	72¼	25½	15,693 Nic.	Philadelphia	1901	1902	592,828	11–4 K.S.	2¾–4	6 K.S.	10 K.S.	12 K.S.	6 K.S.	4 *12-in.*, 16 *6-in.*, 6 *3-in.*, 8 *3-pr.*, 6 *1-pr.*, 2 M., 2 l.	2 sub.	18·0 *t*	1000 1800	551
a.c.	**Maryland**	13,680	502	69½	24½	28,059 B. & W.	Newport News.	1903	1905	756,400	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 sub.	22·4 *t*	900 1850	829
b.	**Massachusetts**	10,288	348	69¼	27⅓	10,240	Philadelphia	1893	1896	620,569	18 H.S.	2¾	5 H.S.	17 H.S.	17 H.S.	10–5 H.S.	4 *13-in.*, 8 *8-in.*, 4 *6-in.*, 20 *6-pr.*, 8 *1-pr.*, 2 M., 2 l.	3	16·2 *t*	400 1560	509
”	**Michigan**	16,000	450	80¼	24½	16,000 W.T.	Newport News	Pro.	..	..	12·9	..	8	10	12–8	..	8 *12-in.*	..	..	..	..
a.c.	**Milwaukee** ‖	9700	424	66	25½	21,000 W.T.	S. Francisco.	1904	1906	580,500	4 H.N.S.	3	4 H.N.S.	..	4 H.N.S.	..	14 *6-in.*, 18 *14-pr.*, 12 *3-pr.*, 12 *1-pr.*, 10 M., 2 l.	..	22·0	650 1500	664
t.	**Minnesota**	16,000	450	77	26¾	16,500 B. & W.	Newport News	1905	1906	844,500	8–11 K.S.	3–4½	8 K.S.	7 K.S.	10 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 20 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	18·8 *t*	900 2200	881
b.	**Mississippi**	13,000	375	77	25	10,000 B. & W.	Philadelphia	1905	..	616,360	9–4 K.S.	..	7 K.S.	7 K.S.	12–8 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 8 *7-in.*, 12 *3-in.*, 6 *3-pr.*, 4 *1-pr.*, 8 M., 2 l.	2 sub.	17·0	600 1750	725
t.	**Missouri**	12,300	388	72¼	25½	15,845 T.	Newport News	1901	1903	592,828	12–4 K.S.	2¾–4	6 K.S.	10 K.S.	12 K.S.	6 K.S.	4 *12-in.*, 16 *6-in.*, 6 *3-in.*, 8 *3-pr.*, 4 *1-pr.*, 2 M., 2 l.	2 sub.	18·1 *t*	1000 1836	551
a.c.	**Montana**	14,500	502	72¾	25	25,000 B. & W.	Newport News	1906	..	970,030‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 22 *3-in.*, 12 *3-pr.*, 4 *1-pr.*, 4 M., 2 l.	4 sub.	22·0	900 2000	845
c.d.s., t.	**Monterey**	4084	256	59	15½	5244 B. & W.	S. Francisco.	1891	1893	345,731	13–6 H.S.	3	..	..	13 H.S.	..	2 *12-in.*, 2 *10-in.*, 6 *6-pr.*, 4 *1-pr.*, 2 M.	..	13·6 *t*	200 233	218
Super-posed turrets.	**Nebraska**	14,948	435	76¼	23¾ †	19,000 B. & W.	Seattle.	1904	1906	767,210	11–4 K.S.	3	6 K.S.	6 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 12 *6-in.*, 12 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	19·0	900 1900	812
c.d.s., t. (1 t.)	**Nevada**	3714	252	50	12¾	2,400 Nic.	Bath, Me.	1900	1903	197,267	11–5 H.S.	1½	..	..	11 H.S.	..	2 *12-in.*, 4 *4-in.*, 3 *6-pr.*, 6 *1-pr.*, 2 M.	..	13·0 *t*	338	222
t.	**New Hampshire**	16,000	450	77	26¾	16,500 B. & W.	Camden, N.J.	1906	..	1,600,000 (Total)	9–4 K.S.	3	7 K.S.	7 K.S.	12 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 12 *3-in.*, 12 *3-pr.*, 4 *1-pr.*, 4 M., 2 l.	4	18·0	900 2350	916
Super-posed turrets.	**New Jersey**	14,948	435	76¼	23¾ †	19,000 B. & W.	Quincy, Mass.	1904	1905	699,680	11–4 K.S.	3	6 K.S.	6 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 12 *6-in.*, 12 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	19·4 *t*	900 1900	812
a c.	**New York**	8200	380½	64¾	27⅓	17,075	Philadelphia	1891	1898	613,377	4 H.S.	6–3	..	..	10 H.S.	5–½4 H.S.	6 *8-in.*, 12 *4-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 2 l.§	2	21·0 *t*	750 1334	498

---

* The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates. ‡ Mean draught.
† Including armour, but not armament. § New armament proposed. ‖ See note on next page.

UNITED STATES.—Armoured Ships—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. *	Armour.						Armament.		Speed	Normal Coal Supply.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
a.c.	**North Carolina**	14,500	502	72¾	25	25,000 B. & W.	Newport News	1906	..	970,630‡	5–3 K.S.	3	5 K.S.	9 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 22 *3-in.*, 12 *3-pr.*, 4 *1-pr.*, 4 M., 2 l.	4 sub.	22·0	900 2000	**845**
t.	**Ohio**	12,440	388	72¼	25½	16,220 T.	S. Francisco.	1901	1904	595,705	11–4 K.S.	3–4	6 K.S.	10 K.S.	12 K.S.	6 K.S.	4 *12-in.*, 16 *6-in.*, 6 *3-in.*, 8 *3-pr.*, 6 *1-pr.*, 2 M., 2 l.	2 sub.	17·8 *t*	1000 2144	**521**
b.	**Oregon**	10,288	348	69¼	27¼	11,033	S. Francisco.	1893	1896	653,447	18 H.S.	2¾	5 H.S.	17 H.S.	17 H.S.	10–5 H.S.	4 *13-in.*, 8 *8-in.*, 4 *6-in.*, 20 *6-pr.*, 4 *1-pr.*, 4 M., 1 l.	3	16·8 *t*	400 1594	**500**
a.c.	**Pennsylvania**	13,680	502	69½	24½	23,600 Nic.	Philadelphia	1903	1905	799,340	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 sub.	22·4 *t*	900 2000	**829**
c.d.s. (2 t.)	**Puritan**	6060	290¼	60	18½	3,700	Chester	1882 reblt.	1896	..	14–6 H.S.	2	..	..	14 H.S.	..	4 *12-in.*, 6 *4-in.*, 6 *6-pr.*, 2 *1-pr.*, 4 M.	..	12·4 *t*	307	**230**
Super-posed turrets.	**Rhode Island**	14,948	435	76¼	23¾ †	19,000 B. & W.	Quincy, Mass.	1904	1905	699,680	11–4 K.S.	3	6 K.S.	6 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 12 *6-in.*, 12 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	19·0	900 1900	**812**
a.c.	**St. Louis** ‖	9700	424	66	25½	21,000 B. & W.	Philadelphia (Cramp)	1905	1906	563,030	4 K.S.	3	4–3	..	4 K.S.	..	14 *6-in.*, 18 *14-pr.*, 12 *3-pr.*, 12 *1-pr.*, 10 M., 2 l.	..	22·3 *t.*	650 1500	**664**
*b.*1stcl.	**South Carolina**	16,000	450	80¼	24½	16,000 W.T.	Newport News	Pro.	..	..	12 9	..	8	10	12–8	..	8 *12-in.*	..	..	..	..
a.c.	**South Dakota**	13,680	502	69½	24½	23,000 B. & W.	S. Francisco.	1904	..	770,570	6–3½ K.S.	4	5 K.S.	4 K.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 sub.	22·0	900 2000	**829**
,,	**Tennessee**	14,500	502	72¾	25	23,000 B. & W.	Philadelphia	1904	1906	970,630‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 22 *3-in.*, 12 *3-pr.*, 4 *1-pr.*, 8 M., 2 l.	4 sub.	22·1 *t.*	900 2000	**858**
t.	**Vermont**	16,000	450	77	26¾	16,500 B. & W.	Quincy, Mass.	1905	1906	858,730	8–11 K.S.	3–4½	8 K.S.	7 K.S.	10 K.S.	7 K.S.	4 *12-in.*, 8 *8-in.*, 12 *7-in.*, 20 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	18·33 *t.*	900 2200	**854**
Super-posed turrets	**Virginia**	14,948	435	76¼	23¾ †	19,000 Nic.	Newport News	1904	1905	737,700	11–8 K.S.	3	6 K.S.	6 K.S.	11 K.S.	6 K.S.	4 *12-in.*, 8 *8-in.*, 12 *6-in.*, 12 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	4 sub.	19·0	900 1900	**812**
a.c.	**Washington**	14,500	502	72¾	27	25,000 B. & W.	Camden, N.J.	1905	1906	970,630‡	5–3 K.S.	3	5 K.S.	6 K.S.	9 K.S.	5 K.S.	4 *10-in.*, 16 *6-in.*, 22 *3-in.*, 12 *3-pr.*, 4 *1-pr.*, 8 M., 2 l.	4 sub.	22·8 *t.*	900 2000	**858**
,,	**West Virginia**	13,680	502	69½	24½	26,135 B. & W.	Newport News	1903	1905	798,310	6–3½ K.S.	4	5 K.S.	12 H.S.	6 K.S.	5 K.S.	4 *8-in.*, 14 *6-in.*, 18 *3-in.*, 12 *3-pr.*, 8 *1-pr.*, 8 M., 2 l.	2 sub.	22·1 *t*	900 2000	**829**
t.	**Wisconsin**	11,653	368	72¼	26	12,452	S. Francisco.	1898	1901	549,666	16½–4 H.S.	3-4	5¼ H.S.	..	15 H.S.	6 H.S.	4 *13-in.*, 14 *6-in.*, 16 *6-pr.*, 6 *1-pr.*, 4 M., 2 l.	4	17·1 *t*	800 1310	**583**
c.d.s. (1 t.)	**Wyoming**	3218	252	50	12¾	2,451 B. & W.	S. Francisco.	1900	1903	200,350	11–5	1½	..	..	11	..	2 *12-in.*, 4 *4-in.*, 3 *6-pr.*, 6 *1*-pr., 2 M.	..	12·4 *t*	881	**222**
b.	Two	20,000	510	85¼	27	..	..	Pro.	..	..	11	..	10–5	..	..	..	10 *12-in.*, 14 *5-in.*, 4 *3-pr.*, 2 *l.*, 3 M.	2 sub.	21·0	1000 2300	..

* See note on previous page. † Mean draught. ‡ Including armour, but not armament. ‖ The Milwaukee and St. Louis are inserted in this list as having side armour, but they are often described as protected cruisers.

Also the monitors Amphitrite, Miantonomoh, Menadnock, and Terror (3990 tons), the second-class battleship Texas (6315 tons), and the ram Katahdin (2155 tons).

UNITED STATES.—Cruising Ships, &c.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. *	Armour.		Armament.		Speed.	Normal Coal Supply.	Complement
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in			knots.	tons.	
3rd cl.*cr.*	**Albany** . shd.	3487	345	43¾	20	7500	Elswick .	1899	1900	247,611	3	3–1¼ shields	6 *6-in.*, 10 *3-pr.*, 12 *1-pr.*, 2 M., 1 l.	..	20·5 *t*	512 747	356
g.b. .	**Annapolis** . .	1000	168	36	12½	1227 B.&W.	Elizabeth Port	1896	1897	46,789	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	13·1 *t*	100 225	135
cr. .	**Atlanta** . .	3000	271¼	42¼	20½	4030 C. & B.&W.	Chester .	1884	1886	126,785	1½	..	2 *8-in.*, 6 *6-in.*, 6 *6-pr.*, 4 *1-pr.*, 2 M.	..	15·6 *t*	382 573	304
3rd cl.*cr.*	**Baltimore** . .	4413	327½	48½	24	10,064	Philadelphia	1888	1890	272,270	4–2½	4½ shield	12 *6-in.*, 6 *3-in.*, 6 *3-pr.*, 4 *1-pr.*, 5 M., 1 l.	..	20·1 *t*	709 1064	383
g.v. .	**Bancroft** . .	839	187½	32	13	1213	Port Elizabeth	1892	1893	51,371	½	..	4 *4-in.*, 8 *3-pr.*, 1 *1-pr.*, 1 M.	..	14·37 *t*	100 136	195
cr. .	**Bennington** . .	1710	230	36	16½	3392	Chester .	1890	1891	100,894	½	..	6 *6-in.*, 4 *6-pr.*, 4 *1-pr.*, 4 M.	..	17·5 *t*	200 403	195
scout .	**Birmingham** .	3750	420	46¾	17	16,000 W.T. turb.	Quincy,Mass.	Bldg.	..	301,000	2–1½	..	2 *5-in.*, 6 *3-in.*	2 sub.	24·0	1250	356
cr. .	**Boston** . • .	3000	271¼	42¼	20½	4030	Chester .	1884	1887	127,196	1½	..	2 *8-in.*, 6 *6-in.*, 6 *6-pr.*, 4 *1-pr.*, 2 M., 1 l.	..	15·6 *t*	380 456	282
g.v. .	**Castine** . .	1177	204	32	14¼	2199	Bath, Me. .	1892	1894	65,450	½	..	8 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	16·0	125 292	151
cr. .	**Chattanooga** shd..	3200	292	44	16¾	5303 B.&W.	Elizabeth Port	1903	1904	212,325	2	..	10 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·65 *t*	470 700	302
scout .	**Chester** . .	3750	420	46¾	17	16,000 W.T. turb.	Bath, Me. .	Bldg.	..	337,000	2–1½	..	2 *5-in.*, 6 *3-in.*	2 sub.	24·0	1250	356
3rd cl.*cr.*	**Chicago** . .	5273	325	48¼	22½	9000 C. & B.&W.	Chester .	1885	1889	182,677	1½	4 shield	4 *8-in.*, 14 *5-in.*, 9 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	18·0	831	409
,, ,,	**Cincinnati** . .	3213	300	42	20¼	8,490 B.&W.	Brooklyn .	1892	1894	226,055	2½	4	11 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 2 M.	..	19·0	350 468	314
cr. .	**Cleveland** . shd..	3200	292	44	16¾	4640 B.&W.	Bath, Me. .	1901	1903	212,325	2	..	10 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·4 *t*	470 700	302
2nd cl.*cr*	**Columbia** . .	7375	412	58¼	25½	18,509	Philadelphia	1892	1894	559,950	4–2½	4 shieid	1 *8-in.*, 2 *6-in.*, 8 *4-in.*, 12 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	22·8 *t*	750 1670	477
g.v. .	**Concord** . .	1710	230	36	16½	3404	Chester .	1890	1891	100,894	½	..	6 *6-in.*, 2 *6-pr.*, 2 *3-pr.*, 2 *1-pr.*	..	16·8 *t*	200 401	194

* Prices exclusive of armament.

UNITED STATES.—Cruising Ships, &c.—*continued.*

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost. †	Armour.		Armament.		Speed.	Normal Coal Supply.	Complement.
											Deck.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
g.r. ,,	**Denver** **Des Moines** shd.	3200	292	44	16¾	4135 B. & W.	Philadelphia Quincy, Mass.	1902	1904	212,325	2	..	10 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·75	470 700	303
3rd cl.*cr.*	**Detroit**	2089	257	37	16¾	5207	..	1891	1892	..	..	..	10 *5-in.*, 6 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	18	200 340	248
g.v.	**Dolphin**	1486	240	32	17	2255	Chester	1884	1885	64,728	..	..	2 *4-in.*, 1 *6-pr.*, 6 *3-pr.*, 2 M.	..	15·5 *t*	173	117
,,	**Don Juan de Austria**	1159	210	32	13	1500	Cartagena	1889	1892	..	..	..	6 *4-in.*, 4 *6-pr.*, 4 M.	..	14·0	210	130
,,	**Dubuque**	1085	174	35	13	1193 B. & W.	Morris Heights N.Y.	1904	1905	..	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 2 M.	..	12·9	200	162
cr.	**Galveston** shd.	3200	292	44	16¾	5073 B. & W.	Richmond, Va.	1903	1904	212,325	2	..	10 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·4	470 700	302
g.v.	**Helena**	1392	250¾	40	10	1988	Newport News	1896	1897	57,536	½	2½	8 *4-in.*, 4 *6-pr.*, 4 *1-pr.*, 2 M.	..	15·5 *t*	100 300	256
,, ,,	**Isla de Cuba** **Isla de Luzon**	1125	192	30	12¼	2627	Elswick	1887	1888	..	2½	..	6 *3-in.*, 4 *6-pr.*, 4 M. 4 *4-in.*, 4 *6-pr.*, 4 M.	..	16·0	160	160
,,	**Machias**	1177	204	32	14¼	2046	Bath, Me.	1891	1893	65,450	½	..	8 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 2 M.	..	15·46 *t*	125 292	151
3rd cl.*cr.*	**Marblehead**	2089	257	37	16¾	Nor. 5450	Boston	1892	1894	138,498	½	..	10 *5-in.*, 6 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	18·9 *t*	200 340	248
g.b.	**Marietta**	1000	174	34	13½	1054 B.&W.	S. Francisco.	1896	1897	45,823	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	13·2 *t*	100 239	140
2nd cl.*cr.*	**Minneapolis**	7375	412	58¼	25½	20,862	Philadelphia	1893	1894	552,754	4–2½	4 shield	1 *8-in.*, 2 *6-in.*, 8 *4-in.*, 12 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	23·0 *t*	750 1200	477
3rd cl.*cr.*	**Montgomery** *	2089	257	37	17	5584	Baltimore	1891	1894	125,860	½	..	4 *6-pr.*	6 (2 sub.)	18·8 *t*	200 340	257
g.v.	**Nashville**	1371	220	38	12	2536 C. & Y.	Newport News	1895	1897	57,536	½	..	8 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 2 M.	..	16·7 *t*	150 400	176
3rd cl.*cr.*	**Newark**	4098	311½	49¼	22½	8868	Philadelphia	1890	1891	256,437	3-2	2 shield	12 *6-in.*, 6 *3-in.*, 6 *3-pr.*, 4 *1-pr.*, 4 M., 2 l.	..	19·0	400 809	384

g.b.	**Newport**	1000	168	36	13	1009	Bath, Me.	1896	1897	..	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	12·2 *t*	100 230	147
3rd cl. *cr.*	**New Orleans** shd.	3487	346	43¾	19¾	7500	Elswick	1896	1898	293,684	..	3–1¼ shields	6 *6-in.*, 4 *4·7 in.*, 10 *3-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	20·0	512 767	366
2nd cl. *cr.*	**Olympia**	5870	340	53	24¾	17,313	S. Francisco.	1892	1895	369,054	4½	4–2½	4 *8-in.*, 10 *5-in.*, 14 *6-pr.*, 4 *1-pr.*, 2 M.	..	21·69 *t*	400 1169	450
g.v.	**Paducah**	1085	174	35	13	1000 B.&W.	Morris Heights, N.Y.	1904	1905	..	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 2 M.	..	12·0	200	162
„	**Petrel**	892	176¼	31	13½	1045	Baltimore	1888	1889	50,755	..	..	4 *6-in.*, 2 *3-pr.*, 4 M.	..	11·8 *t*	100 200	122
g.b.	**Princeton**	1000	168	36	12½	923	Camden	1897	1898	47,262	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	12·0	100 238	135
3rd cl. *cr.*	**Raleigh**	3213	300	42	20¼	8500 B.&W.	Norfolk	1892	1894	226,055	2½	4	11 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 2 M., 1 l.	..	19·0	350 460	313
scout	**Salem**	3750	420	46¾	18¼	16,000 W.T. turb.	Quincy, Mass.	Bldg.	..	301,000	2–1½	..	2 *5-in.*, 6 *3-in.*	2 sub.	24·0	1250	356
3rd cl. *cr.*	**San Francisco**	4098	310	49¼	22¼	10,604	S. Francisco	1889	1891	293,435	3–2	2 Shields	12 *6-in.*, 10 *6-pr.*, 4 *1-pr.*, 2 M.	..	19·5	350 628	383
„	**Tacoma** shd.	3200	292	44	16¾	5288 B.&W.	S. Francisco.	1903	1904	212,325	..	2 Shields	10 *5-in.*, 8 *6-pr.*, 2 *1-pr.*, 4 M., 1 l.	..	16·6 *t*	470 700	302
g.v.	**Vicksburg**	1000	168	36	12½	1118	Bath, Me.	1896	1898	47,406	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	12·7 *t*	100 239	135
„	**Wheeling**	1000	174	34	12½	1080	S. Francisco.	1897	1897	65,540	..	..	6 *4-in.*, 4 *6-pr.*, 2 *1-pr.*, 1 M.	..	12·9 *t*	120 226	140
„	**Wilmington**	1392	250¾	40	10	1894	Newport News	1895	1897	57,536	1	2¼	8 *4-in.*, 4 *6-pr.*, 4 *1-pr.*, 4 M.	..	15·0 *t*	100 300	175
cr.	**Yorktown**	1710	230	36	16½	3392	Philadelphia	1888	1889	93,496	..	..	6 *6-in.*, 2 *6-pr.*, 2 *3-pr.*, 4 *1-pr.*, 2 M.	2	16·1 *t*	200 380	195

* Torpedo training ship. † Prices exclusive of armament.

Also the sailing training ships Chesapeake (1175 tons), launched 1899, Cumberland, Intrepid and Boxer, launched 1904.

Enrolled Auxiliary Cruisers of the United States Navy.

Class.	NAME.	Gross Tonnage.	Length.	Beam.	Depth.	Indicated Horse-Power.	Where Built.	When Built.	Owners.	Armament.	Speed.
			ft.	ft.	ft.						
1st	**St. Louis**	11,629	535½	63	26¾	18,000	Philadelphia .	1895	International Navigation Co.	The armament comprises *6-in.*, *5-in.*, and *4-in.* guns.	22·2
„	**St. Paul**	11,629	535½	63	26¾	18,000	„	1895	„		22·5
„	**Paris.**	10,794	517	63¼	22	20,000	Clydebank, Scotland	1880	„		20·7
„	**New York** . . .	10,802	517	63¼	22	20,000	„	1888	„		20·6
„	**Philadelphia** . . .	10,802	517	63¼	22	20,000	..	1889	„		20·8
„	**Corea**	11,200	..	..	..	..	..	1901	Pacific Mail Steamship Co.		18·0
„	**Siberia**	11,200	..	..	..	..	..	1901	„		18·0

Converted Merchant Vessels Retained.

Class.	NAME.	Displacement.	Length.	Beam.	Draught.	Indicated Horse-Power.	Where Built.	Date of Launch.	Cost.	Armament.	Speed.	Coal.	Complement.
		tons.	ft.	ft.	ft.				£		knots.	tons.	
cr.	**Buffalo** . . .	6888	380½	48	22	3600	Newport News .	1893	117,949	12 *5-in.*, 6 *6-pr.*, 4 *4-in.*, 2 M.	14·5	100	297
„	**Dixie** . . .	6145	389¼	48	19¾	3800	Newport News .	1893	117,949	8 *5-in.*, 4 *6-pr.*, 4 *1-pr.*, 2 M.	16·0	1371	181
„	**Panther** . . .	4260	310	40	18¼	..	Philadelphia .	1889	77,055	6 *5-in.*, 12 *4-in.*, 6 *3-pr.*, 1 M.	13·0	475	198
„	**Prairie** . . .	6872	390½	46¾	22	3800	Philadelphia .	1890	117,949	8 *6-in.*, 6 *6-pr.*, 4 *3-pr.*, 4 *1-pr.*, 2 M.	14·5	1000	295
„	**Yankee** . . .	6888	380½	48	22	3800	Newport News .	1892	117,949	8 *5-in.*, 6 *6-pr.*, 2 *1-pr.*, 2 M.	14·5	1000	282
„	**Mayflower** (yacht) .	2690	275	36	17¼	4600	Clydebank .	1896	88,359	. . . .	16·8	584	160

The armament of the above vessels includes 4-in., 5-in., and 6-in. guns.

SHIPS BELONGING TO POWERS WHOSE NAVIES ARE OF LESSER IMPORTANCE.

Belgium.—Several steam vessels, between 419 and 684 tons, principally employed as packets, under the orders of the Government. The Ville d'Anvers, 414 tons, for fishery protection.

Bulgaria.—Eleven steamers of small size, of which one is used as the Prince's yacht. Two armoured gunboats for the Danube completing at Leghorn. Other ships are to be laid down. The Nadiezda, a despatch vessel (715 tons) of the French Casabianca type, launched at Bordeaux in 1898; speed, 18·85 knots; 2600 I.H.P.; Lagrafel-d'Allest boilers; armament, 2 3·9-in., 3 1·8-in. Q.F., and 2 torpedo tubes.

Colombia.—The cruiser Almirante Lezo (*ex* El Baschir), of 1200 tons displacement; 2500 H.P.; speed, 18 knots; built in 1892 bought from Morocco, 1902. Two gunboats, Chercuito, 643 tons, and Bogota. Two river gunboats, General Nerino and Esperanza, 400 tons.

Ecuador.—Two old (1886) French despatch vessels, Papin and Inconstant (891 tons), built of wood and iron, were bought One torpedo boat and two steam transport vessels.

Egypt.—The Nile stern-wheel gunboats Sultan, Sheikh and Melik, 140 tons, Fateh and Naseh, 128 tons; also the Abu Klea, Hafir, Metemmeh, and Tamai. Some steam vessels on the coast.

Hayti.—Steel gunboat—Capois la Mort, 260 tons, 1 3·9-in., and 4 1-pr. Q.F. Iron corvette—Dessalines, 1200 tons, armed with 1 3·9-in. Q.F., 2 3·9-in. B.L., 2 l., 2 M. Two sloops—St. Michael and 1804. Gun vessel, 22nd of December.

Mexico.—Two gun-vessels, Tampico and El Cruz, launched at Elizabethport, New Jersey, September, 1902, displacement, 980 tons; armament, 4 4-in. Q.F., 6 6-pr.; bow torpedo tube; 2400 I.H.P.; speed, 16 knots; fitted to serve as transport for 200 troops. Gun. vessels Bravo and Morero, 1200 tons; 2600 I.H.P.; Blechynden boilers; 17 knots; launched at the Orlando Yard, Leghorn, 1904 The Zaragoza, built of steel, 1200 tons, 1300 H.P., 15 knots speed, and armed with 4 4·7-in. guns and 4 small quick-firing guns. Two gun vessels—Democrata and Mexico, of 450 tons and 11 knots speed, armed with 2 6½-in. muzzle-loaders and 2 small guns. Two small gunboats of 10 knots speed. Five torpedo boats.

Peru.—Almirante Grau, cruiser, 3200 tons; 370 ft. long, 40 ft. 6 in. beam, 14 ft. 3 in. draught; launched at Barrow, March, 1906; 2 6-in., 8 14-pr., 8 1¼-pr.; 2 submerged torpedo-tubes; 1½-in. armoured deck, 3-in. conning tower; 14,000 I.H.P.; 24 knots. A sister vessel is in hand at the same yard. Eclaireur, cruiser, 1769 tons, launched 1877, and partially reconstructed. Bought from France. Lima, built 1881, of 1700 tons displacement, 1800 I.H.P., 16 knots speed; armament, 2 6-in. B.L.R. guns. Screw steamer, Santa Rosa, of about 400 tons.

Roumania.—Elizabeta, protected cruiser (deck 3 in.), built in 1887 at Elswick; 230 ft. long, 32 ft. 10 in. beam; 1320 tons; 3000 I.H.P.; armament, 4 5·9-in. B.L.R., 4 Q.F., 2 M., 4 torpedo tubes. Composite gunboat Mircea, 360 tons; Grivitza, 110 tons. Two gunboats of 45 tons, and 3 first-class torpedo boats, these forming the sea division. For the Danube, the gunboats Fulgurul, Oltul, Siretul, Bistritza, 90 to 100 tons, the *torpilleur de barrage* Alexandru cel Bun (104 tons), 5 sloops, 2 small torpedo boats, and the paddle steamer Romania, 240 tons, repaired 1890. The shipbuilding programme contemplates the building of 8 monitors of 500 tons, 12 torpedo-boats and 8 vedettes for the Danube, and 6 coast-defence vessels of 3500 tons, 4 destroyers of 300 tons, and 12 torpedo-boats for the Black Sea.

Santo Domingo.—The Independencia, built in England 1894, 170 ft. long, 25 ft. broad, displacement 322 tons, and armed with seven Hotchkiss quick-firing guns. Restauracion, steel gunvessel, 1000 tons, launched at Glasgow in 1896. The 14-knot cruiser Presidente has been reconstructed, and carries seven guns.

Sarawak.—Two gunboats, of 175 and 118 tons respectively, of low speed, each armed with two guns.

Siam.—Deck-protected cruiser, Maha Chakrkri, 290 ft. long, 39 ft. 4 in. beam, of 2500 tons displacement and 17 to 18 knots speed; armament, four 4·7-in. quick-firing guns, and ten 6-pr. quick-firing guns. Makut-Rajakamar, 650 tons. The gunboats Bali, Muratha, and Sugrib, 600 tons, one 4·7-in. Q.F., five 2·2 in., four 1·4 in., 12 knots, launched 1898 and 1901. Several other gunboats. Three modern despatch vessels 100 to 250 tons.

Uruguay.—Gunboats: General Artigas, 274 tons, 12½ knots speed, 2 4·7-in. (Krupp), 2 M.; and General Saurez, 300 tons. A despatch vessel, a transport, and several steamers.

Venezuela.—The gunboats Bolivar (571 tons, 18·6 knots) and Miranda (200 tons, 12 knots); transports Restaurador (568 tons) and Zamora (350 tons).

BRITISH AND FOREIGN TORPEDO-BOAT FLOTILLAS.

Great Britain.

Name or Number.	Built by.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
Great Britain. TORPEDO-BOAT DESTROYERS.			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
†Ardent	Thornycroft	1894	201·6	19	7·3	2	265	4,500	27·97	1-12 pr. 5-6 prs.	2	45	60
Banshee	Laird	1894	210	19·5	..	2	290	4,400	27·97	1-12 pr. 3-6 prs.	2	50	
†Boxer	Thornycroft	1894	201·6	19	7·3	2	265	4,500	27·17	1-12 pr. 5-6 prs.	2	45	60
†Bruizer	,,	1895	201·6	19	7·3	2	265	4,500	27·97	1-12 pr. 5-6 prs.	1	45	60
*Charger	Yarrow	1894	190	18·5	5·25	2	270	3,100	27·98	1-12 pr. 5-6 prs.	2	45	60
Conflict	White	1894	205·6	20	..	2	320	4,370	27·21	1-12 pr. 5-6 prs.	2	50	60
Contest	Laird	1894	210	19·5	..	2	290	4,400	27·4	1-12 pr. 3-6 prs.	1	50	60
†Daring	Thornycroft	1893	185	19	7	2	260	4,300	27·70	1-12 pr. 3-6 prs.	1	45	50
*Dasher	Yarrow	1895	190	18·5	5·25	2	255	3,182	26·21	1-12 pr. 5-6 prs.	2	45	60
Dragon	Laird	1894	210	19·5	..	2	290	4,500	27·14	1-12 pr. 3-6 prs.	1	50	
Ferret	,,	1893	194	19·25	5	2	280	4,810	27·62	1-12 pr. 3-6 prs.	1	50	70
Fervent	Hanna	1895	200	19	7·8	2	275	3,800	[27]	1-12 pr. 5-6 prs.	1	50	70
†Handy	Fairfield	1895	200	19	7·8	2	275	3,800	27·04	1-12 pr. 5-6 prs.	1	50	70
Hardy	Doxford	1895	196	19	5	2	260	4,200	26·8	1-12 pr. 5-6 prs.	2	50	70
†Hart	Fairfield	1895	185	19	7	2	275	4,010	27·07	1-12 pr. 5-6 prs.	1	50	70
*Hasty	Yarrow	1894	190	18·5	5·25	2	270	3,250	26·08	1-12 pr. 5-6 prs.	2	45	60
Haughty	Doxford	1895	196	19	5	2	260	4,000	27·1	1-12 pr. 5-6 prs.	2	50	60
Havock	Yarrow	1893	180	18·5	5·25	2	240	3,500	26·77	1-12 pr. 3-6 prs.	1	43	57
Hornet	,,	1893	180	18·5	5·25	2	240	4,000	27·31	1-12 pr. 3-6 prs.	1	43	57
†Hunter	Fairfield	1895	200	19·7	6·5	2	275	4,000	27·2	1-12 pr. 5-6 prs.	1	45	60
Janus	Palmer	1895	200	19·7	6·5	2	275	3,789	27·8	1-12 pr. 5-6 prs.	2	50	60
Lightning	,,	1895	200	19·7	6·5	2	275	4,007	27·94	1-12 pr. 5-6 prs.	2	50	60
Lynx	Laird	1894	194	19·25	5	2	280	4,000	27·00	1-12 pr. 3-6 prs.	1	50	70
Opossum	Hawthorn	1895	200	19	5·2	2	295	4,052	28·24	1-12 pr. 5-6 prs.	1	50	60
Porcupine	Palmer	1895	200	19·7	6·5	2	275	3,866	27·91	1-12 pr. 5-6 prs.	2	50	60
Ranger	Hawthorn	1895	200	19	5·2	2	295	3,900	27·13	1-12 pr. 5-6 prs.	1	50	60
Rocket	Brown & Co.	1894	205·6	19·5	5·25	2	280	4,200	27·37	1-12 pr. 5-6 prs.	2	50	60
Salmon	Earle's Co.	1895	200	19·5	5·4	2	305	3,580	27·60	1-12 pr. 5-6 prs.	2	50	60
Shark	Brown & Co.	1894	205·6	19·5	5·25	2	280	4,250	27·59	1-12 pr. 5-6 prs.	2	50	60
Snapper	Earle's Co.	1895	200	19·5	5·5	2	305	4,500	27·9	1-12 pr. 5-6 prs.	2	50	60
Spitfire	Armstrong	1895	200	19	5·3	2	295	3,780	27·5	1-12 pr. 5-6 prs.	1	45	60
Starfish	Vickers	1894	195	20·5	..	2	265	4,000	27·97	1-12 pr. 5-6 prs.	2	45	60
Sturgeon	,,	1894	195	20·5	..	2	265	4,010	27·16	1-12 pr. 5-6 prs.	2	45	60
Sunfish	Hawthorn	1895	200	19	5·2	2	295	4,292	27·62	1-12 pr. 5-6 prs.	1	50	60
Surly	Brown & Co.	1894	205·6	19·5	5·25	2	280	4,400	28·05	1-12 pr. 5-6 prs.	2	50	50
Swordfish	Armstrong	1895	200	19	5·3	2	295	4,100	[27]	1-12 pr. 5-6 prs.	1	45	60
Teazer	White	1895	200	19·5	5·6	2	320	4,500	[27]	1-12 pr. 5-6 prs.	2	50	60
Wizard	,,	1895	200	19·5	5·2	2	320	4,400	[27]	1-12 pr. 5-6 prs.	2	45	60
Zebra	Thames Ironworks	1895	200	20	6	2	310	3,850	27·00	1-12 pr. 5-6 prs.	2	50	60
Zephyr	Hanna	1895	200	19	5·3	2	275	3,850	[27]	1-12 pr. 5-6 prs.	1	50	60
†Albatross	Thornycroft	1898	227·6	21·25	8·5	2	430	7,900	32	1-12 pr. 5-6 prs.	2	68	100
†Angler	,,	1896	210	19·6	7·1	2	310	5,800	30·37	1-12 pr. 5-6 prs.	2	60	80
Arab	Brown & Co.	1901	218	20·0	5·6	2	470	6,000	31	1-12 pr. 5-6 prs.	2	60	80
†Ariel	Thornycroft	1897	210	19·6	7·1	2	310	5,800	30·59	1-12 pr. 5-6 prs.	2	60	80
†Avon	Vickers	1896	210·6	21·6	5·6	2	355	6,000	30	1-12 pr. 5-6 prs.	2	60	80
Bat	Palmer	1896	215	20·75	6·8	2	360	6,185	30·1	1-12 pr. 5-6 prs.	2	60	91
†Bittern	Vickers	1897	210·6	21·6	5·6	2	355	6,000	30	1-12 pr. 5-6 prs.	3	60	80
Brazen	Brown & Co.	1896	218	20·0	5·6	2	345	6,000	30	1-12 pr. 5-6 prs.	2	60	80
†Bullfinch	Earle's Co.	1901	210	20·6	5·8	2	345	5,800	30	1-12 pr. 5-6 prs.	2	60	80
†Cheerful	Hawthorn	1897	210	21·0	8	2	355	6,000	30	1-12 pr. 5-6 prs.	2	62	82
†Coquette	Thornycroft	1898	210	19·5	7·2	2	335	5,800	30·31	1-12 pr. 5-6 prs.	2	60	80
Crane	Palmer	1896	215	20·7	6·8	2	360	6,336	30·3	1-12 pr. 5-6 prs.	2	60	80
†Cygnet	Thornycroft	1898	210	19·5	7·2	2	335	5,800	30·35	1-12 pr. 5-6 prs.	2	60	80
†Cynthia	,,	1898	210	19·5	7·2	2	355	5,800	30·2	1-12 pr. 5-6 prs.	2	60	80
†Desperate	,,	1895	210	19·6	7·2	2	310	5,800	30	1-12 pr. 5-6 prs.	2	60	80
†Dove	Earle's Co.	1898	210·0	20·6	5·8	2	345	5,800	30	1-12 pr. 5-6 prs.	2	60	80
Earnest	Laird	1896	210·6	21·7	5·3	2	355	6,000	30·13	1-12 pr. 5-6 prs.	2	58	80
Electra	Brown & Co.	1901	218	20·0	5·6	2	3[illegible]0	6,000	30	1-12 pr. 5-6 prs.	2	58	80
Express	Laird	1897	227·6	22·0	9	2	465	9,000	31	1-12 pr. 5-6 prs.	2	60	80
Fairy	Fairfield	1897	227·6	22·0	9	2	355	6,000	30	1-12 pr. 5-6 prs.	2	60	80
†Falcon	,,	1901	220	21·3	9	2	375	6,000	30	1-12 pr. 5-6 prs.	2	60	80
†Fame	Thornycroft	1896	210·6	19·6	7·1	2	310	5,800	30·16	1-12 pr. 5-6 prs.	2	60	80
Fawn	Palmer	1897	215	20·7	6·8	2	360	6,581	30·5	1-12 pr. 5-6 prs.	2	60	91
Flirt	,,	1897	215	20·7	6·8	2	360	6,682	30	1-12 pr. 5-6 prs.	2	60	91
Flying Fish	,,	1897	215	20·7	6·8	2	360	6,416	30·4	1-12 pr. 5-6 prs.	2	58	91

---

* Built by Yarrow, fitted with Thornycroft W.T. boilers at Earle's. All Jarrow-built destroyers have Reed's boilers. Vessels marked † have Thornycroft W.T. boilers.

The Skate has been used as a target.

Great Britain—*continued.*

Name or Number.	Built by.	Launched.	Dimensions. Length.	Beam.	Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
TORPEDO-BOAT DESTROYERS.			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
†Foam	Thornycroft	1896	210	19·6	7·1	2	310	5,800	30·18	1–12 pr. 5–6 prs.	2	58	80
Gipsy	Fairfield	1897	227·6	22·0	9	2	355	6,000	30	1–12 pr. 5–6 prs.	2	60	80
Greyhound	Hawthorn	1900	210	21	8·6	2	385	6,000	30	1–12 pr. 5–6 prs.	2	60	90
Griffon	Laird	1896	210·0	20	5·3	2	355	6,000	30·11	1-12 pr. 5-6 prs.	2	58	80
Kestrel	Brown & Co.	1898	218	20·0	5·6	2	350	6,000	30	1–12 pr. 5–6 prs.	2	60	80
Kangaroo	Palmer	1901	215	20·75	6·8	2	370	6,500	30	1–12 pr. 5–6 prs.	2	..	91
†Lee	Doxford	1899	210·0	19·9	7·6	2	365	5,400	30	1–12 pr. 5–6 prs.	2	58	80
Leopard	Vickers	1897	210	20·0	5·6	2	350	6,000	30	1–12 pr. 5–6 prs.	2	60	80
Leven	Fairfield	1901	218·0	20.0	5·6	2	370	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Lively	Laird	1901	218	20·0	5·6	2	385	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Locust	,,	1896	210	21·7	5·3	2	355	6,000	30·16	1–12 pr. 5–6 prs.	2	58	80
†Mallard	Thornycroft	1896	210·6	19·6	7·1	2	310	5,800	30·11	1–12 pr. 5–6 prs.	2	60	80
Mermaid	Hawthorn	1898	210	21·0	8	2	355	6,000	30	1–12 pr. 5–6 prs.	2	62	82
Myrmidon	Palmer	1901	215	20·75	6·8	2	370	6,500	30	1–12 pr. 5–6 prs.	2	..	91
Orwell	Laird	1901	218·0	20·0	5·6	2	360	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Osprey	Fairfield	1897	227·6	22·0	9	2	355	6,000	30	1–12 pr. 5–6 prs.	2	60	80
†Ostrich	,,	1901	210	21·0	9	2	375	6,000	30	1–12 pr. 5–6 prs.	2	60	80
Otter	Vickers	1896	210	20·0	5·6	2	350	6,000	30	1–12 pr. 5–6 prs.	2	60	80
Panther	Laird	1897	210·6	21·7	5·3	2	355	6,000	30·14	1–12 pr. 5–6 prs.	2	58	80
Peterel	Palmer	1899	215	20·8	..	2	370	6,200	30	1 12 pr. 5–6 prs.	2	62	85
Quail	Laird	1895	213·6	21·6	5·3	2	355	6,000	30·38	1–12 pr. 5–6 prs.	2	58	90
Racehorse	Hawthorn	1900	210	21	8·6	2	385	6,000	30	1–12 pr. 5–6 prs.	2	60	90
Recruit	Brown & Co.	1901	218·0	20·0	5·6	2	350	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Roebuck	Hawthorn	1901	210	21	8·6	2	385	6,000	30	1–12 pr. 5–6 prs.	2	60	90
Seal	Laird	1897	218·0	20·0	5·6	2	355	6,000	30·15	1–12 pr. 5–6 prs.	2	58	80
Spiteful	Palmer	1898	215	20·75	6·8	2	365	6,500	30·1	1–12 pr. 5–6 prs.	2	..	91
Sprightly	Laird	1901	218	20·0	5·6	2	385	6,000	30	1–12 pr. 5–6 prs.	2	58	80
†Stag	Thornycroft	1899	210	19·75	7·2	2	320	5,800	30	1–12 pr. 5–6 prs.	2	60	80
Star	Palmer	1896	215	20·75	6·88	2	360	6,266	30·7	1–12 pr. 5–6 prs.	2	58	91
Success	Doxford	1901	210·0	21·0	9·2¼	2	380	6,000	30	1–12 pr. 5–6 prs.	2	62	43
†Sylvia	,,	1897	210	19·9	7·6	2	350	5,400	30	1–12 pr. 5–6 prs.	2	58	80
Syren	Palmer	1901	215	20·75	6·8	2	390	6,500	30	1–12 pr. 5–6 prs.	2	..	91
Taku	Schichau	1898	193·6	20	5	2	305	6,500	32	6–3 pr. Q	3	..	67
Thorn	Yarrow	1901	210	21	5·5	2	380	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Thrasher	Laird	1896	210·6	21·7	5·3	2	355	6,000	30·13	1–12 pr. 5 6 prs.	2	58	80
Tiger	Brown & Co.	1901	210	21	5·5	2	380	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Vigilant	,,	1901	210	21	5·5	2	380	6,000	30	1–12 pr. 5–6 prs.	2	58	80
†Violet	Doxford	1897	210	20·75	6·88	2	350	5,400	30	1–12 pr. 5–6 prs.	2	58	80
Virago	Laird	1896	210·6	21·7	5·3	2	355	6,000	30·13	1-12 pr. 5–6 prs.	2	58	80
a Vixen	Vickers	1901	210·0	20·0	5·8	2	400	6,000	30	1–12 pr. 5–6 prs.	2	62	88
Vulture	Brown & Co.	1898	218	20	5·6	2	345	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Whiting	Palmer	1896	215	20·75	6·88	2	360	6,239	30·2	1–12 pr. 5–6 prs.	2	58	91
Wolf	Laird	1897	218	20	5·6	2	355	6,000	30	1–12 pr. 5–6 prs.	2	58	80
Derwent	Hawthorn	1904	220	23	10	2	534	7,000	25	1–12 pr. 5–6 prs.	2	70	130
‡Eden	,,	1903	220	23	8¾	6	527	7,000	25	1 12 pr. 5–6 prs.	2	70	130
Exe	Palmer	,,	225	23½	10	2	540	7,000	25½	1–12 pr. 5 6 prs.	2	70	127
Ribble	Yarrow	1904	225	23½	10	2	550	7,500	26	1–12 pr. 5–6 prs.	2	70	120
Itchen	Laird	1903	225	23½	10	2	550	7,000	25½	1–12 pr. 5–6 prs.	2	70	130
Usk	Yarrow	,,	225	23½	10	2	550	7,500	26	1–12 pr. 5 6 prs.	2	70	120
Teviot	Yarrow	,,	225	23½	10	2	550	7,500	26	1–12 pr. 5–6 prs	2	70	120
Ettrick	Palmer	,,	225	23½	10	2	540	7,000	25½	1–12 pr. 5–6 prs.	2	70	127
Foyle	Laird	,,	225	23½	10	2	550	7,000	25½	1-12 pr. 5–6 prs.	2	70	120
Erne	Palmer	,,	225	23½	10	2	540	7,000	25½	1–12 pr. 5 6 prs.	2	70	127
Arun	Laird	,,	225	23½	10	2	550	7,000	25½	1–12 pr. 5–6 prs.	2	70	130
Blackwater	Laird	,,	225	23½	10	2	550	7,000	25½	1–12 pr. 5 6 prs.	2	70	130
Cherwell	Palmer	,,	225	23½	10	2	540	7,000	25½	1 12 pr. 5–6 prs.	2	70	127
Dee	Palmer	,,	225	23½	10	2	540	7,000	25½	1-12 pr. 5–6 prs.	2	70	127
Jed	Thornycroft	1904	222	23½	9·6	2	640	7,500	25½	1–12 pr. 5–6 prs.	2	70	126
Kennet	,,	1903	222	23½	9·6	2	640	7,500	25½	1–12 pr. 5–6 prs.	2	70	126
‡Velox	Parsons	1902	210	23	8½	8	440	8,000	27	1-12 pr. 5 6 prs.	2	63	130
Waveney	Hawthorn	1903	220	23½	10	2	534	7,000	25	1–12 pr. 5–6 prs.	2	70	130
Welland	Yarrow	,,	225	23½	10	2	550	7,500	26	1–12 pr. 5–6 prs.	2	70	120
Chelmer	Thornycroft	1904	222	23½	9·6	2	600	7,500	25·5	1–12 pr. 5–6 prs.	2	72	95 126
Boyne	Hawthorn	1904											
Colne	Thornycroft	1905											
Doon	Hawthorn	1904											
Gala	Yarrow	1905											
Garry	Yarrow	1905											
Kale	Hawthorn	1904											
Rother	Palmer	1904											
Liffey	Laird	1904											
Moy	,,	1904											
Ness	White	1905											
Nith	,,	1905											
Ouse	Laird	1905											
Swale	Palmer	1905											
Ure	Palmer	1904											
Wear	Palmer	1905											

† Have Thornycroft W.T. boilers. ‡ Hulls and Yarrow boilers of these vessels by Hawthorn Leslie & Co.
a Has four Express W.T. boilers.

The River class of t.b.d. will have 3 12pr. 8 cwt. guns substituted for the 5 6prs. they now carry.

Great Britain—*continued.*

Name or Number.	Built by.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal or Oil.
			Length.	Beam.	Draught.								
TORPEDO-BOAT DESTROYERS.			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
‡*Afridi .. .. (Ocean-going.)	Hawthorn	..	250	25	7·6	3	790	14,250	33	3-12-prs.	2	60	90 185
*Cossack	Laird	1907						14,000					
*Ghurka	Armstrong	..						14,250					
*Mohawk.. ..	White	1907						14,500					
†*Tartar	Thornycroft ..	..	272	26	9·0	3	800	14,500	33	..	..	68	..
Saracen	White	..	272	26	9.0	..	893	5,600	33	2 4-in.	..	..	..
Amazon	Thornycroft ..	..	280	26½	9.0	..	888				..	..	..
5 t.b.ds. (programme 1907–8)..	..	Pro.	..	..	..	..	..	..	..	..	..	..	..
TORPEDO BOATS.													
FIRST CLASS—													
*Dragon Fly	White	1906	175	17½	5 8	..	235	..	..	..	..	..	21
*Firefly	,, ...	1906					235	..	..	..	..	..	21
†*Gadfly	Thornycroft ..	1906	166½	17·6	5·8	3	215	3,750		2-12 prs.	3	35	20
†*Glowworm	,, ..	1906							27·52				
†*Gnat	,, ..	1906							26				
†*Grasshopper	,, ..	1907											
†*Greenfly..	,, ..	1907											
*Mayfly	Yarrow..	1907	172	18	5·3	..	235	..	..	..	..	..	20
*Moth	,, ...	1907	172	18	5·3	..	225	..	..	..	..	..	20
*Sandfly	White	1906	175	17½	5·8	..	235	..	..	..	..	..	21
*Spider	,, ...	1906	175	17½	5·8	..	235	..	..	..	..	..	21
*Cricket	White	1906	175	17½	5·8	..	235	..	..	..	..	..	21
12 1st class t.b.s building	..	..	172 to 185	17½ to 18	5½ to 6	..	251 to 280	4,000	26	..	..	..	23§ to 25
12 1st class t.b.s projected (programme 1907–8)	..	..	..	..	..	..	..	..	..	..	..	..	..
*a*34–38 (5 boats) ..	White	1886	125	14·6	4	1	60–66	950	18–19	..	5	15	..
39, 40 (2 boats) ..	Yarrow..	1885	100	12·5	..	..	40	500	..	..	1	15	..
41–60 (20 boats) ..	Thornycroft ..	1886	127·5	12·5	6·2	1	60	700	21	2–3 prs.	4	15	..
61, 63–74, 76–78 (16 boats)	Yarrow..	1886	125	13	5·5	1	75	700	19–20	2–3 prs.	5	15	20
79	,, ...	1886	125	13	5·5	..	75	1,000	22·4	2–3 prs.	..	15	20
80	,, ...	1887	135	14	6	1	105	1,540	23	4–3 prs.	5	21	30
81	White	1885	150	17·5	..	1	125	..	..	6–3 prs.	3	25	35
82–87 (6 boats) ..	Yarrow..	1889	130	13·5	5·5	1	85	1,100	23	3–3 prs.	3	19	20
88, 89 (2 boats) ..	,, ...	1894	142	14·75	4·5	1	112	1,600	..	3–3 prs.	3	18	20
90	,, ...	1895	140	14·25	3·7	1	105	1,430	..	3–3 prs.	3	18	18
91, 92 (2 boats) ..	Thornycroft ..	1894	140	15·5	7·5	1	130	2,400	23–24	3–3 prs.	3	18	25
93	,, ..	1893	140	15·5	5·4	2	130	2,200	23·5	3–3 prs.	3	18	25
94–96 (3 boats) ..	White	1894	140	15·5	..	1	130	2,000	23·2	3-3 prs.	3	18	25
97	Laird	1893	140	15·5	..	1	130	2,690	23·35	3–3 prs.	3	18	25
†98 and 99 .. .. 107 and 108	Thornycroft ..	1901	160	17	8·4	1	178	2,850	25	3–3 prs.	3	32	20
109-113	,, ..	1902	166	17·25	8·4	1	200	2,900	25	3–3 prs.	3	32	42
114–117	White	1903	165	17·6	8·8	1	205	2,900	25	3–3 prs.	3	32	23
SUBMARINES.													
5 boats (Nos. 1-5) .	Vickers	1901-2	63·4	11·9	..	1	120	150	7½	..	1	7	..
3 boats (Nos. A 2–A 4, programme 1902-3)	,, ...	1903	100	10	..	1	180	150	15 10	..	2	..	11
9 new boats (Nos. A5–A 13 (programme 1903–4)	,, ...	1904	150	..	..	..	..	..	16	..	..	..	..
11 new boats (B Class)	,, ...	1905	135	13½	..	..	313	600	13 9	..	..	..	15‖
11 new boats (programme 1905-6) C class	,, ...	190-67	135	13½	..	..	314	600	13	..	..	..	15
6 boats. (programme 1906-7) C 12-16 D 1	Contract	Bldg.	135	13½	..	..	313	600	13	..	..	..	15
2 boats, (programme 1906-7) C 17 & C 18	Chatham												
12 programme 1907–8	..	Pro.	..	..	..	..	..	..	..	..	..	..	..

* Fitted with turbines and for using oil fuel. † Have Thornycroft W.T. boilers. ‡ Fitted with modified Yarrow W.T. boilers.
a No. 34 is fitted with Laird W.T. boilers. § Oil. ‖ Gasoline.

Argentine Republic.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
Destroyers—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Corrientes	Yarrow ..	1896	190	19 6	7·4	2	280	4,000	27·4 *t.*	1 14-pr. 3 6 pr, Q.F., 2 M.	3	54	80
Missiones..	Yarrow ..	1896	190	19·6	7·4	2	280	4,000	26·0 *t.*		3	54	80
Entre Rios	Yarrow ..	1896	190	19·6	7·4	2	280	4,000	26·7 *t.*		3	54	80
First Class—													
2 boats	Thornycroft	1890–1	150	14·5	5·2	2	110	1,500	24·52	3 3-prs.	3	27	22
6 boats	Yarrow ..	1890	130	13·5	6	1	85	1,200	23–24	2 3-pr. Q.F.	2	15	16

The two 150-ft. boats are named Comodoro Py and Murature.

The six 130-ft. boats are named Bathurst, Buchardo, Jorge, King, Pinedo, and Thorne. They have locomotive boilers.

Austria-Hungary.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
Destroyer—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Huszar	Yarrow ..	1905	219·8	20 3	..	2	384	6,000	28·5	1 12-pr. 7 3-pr.		64	
Streiter	Trieste ..	1906											
Ulan		1906											
Wildfang		1906											
Uskoke		Bldg.											
Scharfschütze		Bldg.											
6 others		Bldg.											
First Class—													
Adler, Falke	Yarrow ..	1886	135	13·7	5·6	1	95	900	22·4	2 Nord.	2	16	28
22 boats	Elbing, Trieste, &c.	1890–92	128	15·9	6·9	1	83	900 1,000	17·5 to 21·5	2 mach.	2	15	28
Kaiman	Yarrow ..	1905	179·9	18·0	..	1	197	3,000	26	4 3-pr.		25	
Alligator	Trieste ..	Bldg.											
Anaconda													
Drache													
Delphin													
Greif													
Hay													
Krokodil													
Moewe													
Narval													
Pinguin													
Schwalbe													
Seekund													
Wal													
10 unnamed													
Boa	Yarrow ..	1898–9	152·6	15·3	7·6	1	133	2,000	24·3	2 3-pr. Q.F.	3	24	30
Cobra													
Kigyo													
Python													
Viper	Yarrow ..	1896	147·6	14·9	7·6	1	130	2,000	26·5	2 3-pr. Q.F.	2	26	30
Natter	Yarrow ..	1896	150	17·5	8·8	2	152	2,300	26·5	2 3-pr. Q.F.	3	..	30

Two submarine boats building at Barrow.

Brazil.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
First Class—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Araguary	Thornycroft	1891	150	14·5	5·2	2	150	1,550	25·1	2 Q.F.	4	27	22
Iguatemi	Thornycroft	1891	150	14·5	5·2	2	150	1,550	25·4	2 Q.F.	4	27	22
Marcilio Diaz	Thornycroft	1891	150	14·5	5·2	2	150	1,550	25·8	2 Q.F.	4	27	22
5 boats	Elbing ..	1892–3	152	17·2	7·9	2	130	2,200	28	2–1 prs.	3	24	30

Two submarine boats, Jacinto Gomez and Mello Marques.

Chili.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
Destroyers—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Capitan Orella ..	Laird	1896	210	21·6	5·4	2	300	6000	30·17	1-12 pr. Q.F. 5-6 pr.	2	65	90
Capitan Munoz Gamero.. ..	Laird	1896	210	21·6	5·4	2	300	6000	30·42	1–12 pr. Q.F. 5–6 pr.	2	65	90
Teniente Serrano ..	Laird	1896	210	21·6	5.4	2	300	6000	30·35	1–12 pr. Q.F. 5·6 pr.	2	65	90
Guardia-Marina Riquelme ..	Laird	1896	210	21·6	5·4	2	300	6000	30·09	1-12 pr. Q.F. 5-6 pr.	2	65	90
Capitan Merino Tarpa .. .. .. Capitan O'Brien ..	Laird	1901	210	21·6	5·4	2	350	6000	30	Do.	2	65	90
First Class—													
Injeniero Hyatt, Cirujano Videla, Injeniero Mutilla, Guardia-Marina Contreras, Capitan Thompson, and Teniente Rodriguez (Viper type) ..	Yarrow ..	1896 1898	152·6	15·3	7·9	1	140	2200	27·5 27·2	3-3 pr. Q.F.	3	28	40
Tegualda, Quidora, and Fresia	Yarrow ..	..	87	10·9	..	1	..	400	..	..	..	..	
Second Class—													
1 boat	White	1892	60	9·6	5	1	15	270	19	..	1	..	
1 boat	La Seyne ..	1895	42	8·6	..	1	..	..	..	..	1	..	

The Thompson and Rodriguez were sent out in sections, and put together at Talcahuano and Valparaiso.

China.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
First Class—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
3 boats	Elbing ..	1886–97	144·3	16·4	7·5	1	128	1,400	24·2	4 1-pr. revs.	2	20	15
25 boats	Stettin, &c. .	1886–87	110	13	4·9	1	65	1,000	19·5	1-pr. revs.	3	16	10
2 boats	Stettin ..	1897	123·5	21·7	..	..	120	..	20	2 1-pr.	3	20	
Second Class—													
1 boat	Foochow ..	1903	88·6	6·7	3·3	1	30	550	20·5				

About twenty boats only are said to be serviceable.

Costa Rica.

Costa Rica has one 62-ft., 15-knot boat.

Denmark.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
First Class—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Ormen	Copenhagen	Bldg.	..	..	..	..	..	2,000	..	..	..	..	..
Hajen .. .. .. Havörnen .. .. Söbjörnen	Copenhagen Copenhagen Copenhagen	1896 1897 1898	154·3	15·4	7·9	2	142	2,317	22·9	1 4·7-in. 1 1-pr.	3	..	..
Delfinen	Thornycroft	1883	111·5	12·6	6	1	59	620	20	1 mach.	2	14	9
Havhesten	Thornycroft	1888	137·9	14	7	1	94	1,200	22·8	2 1-pr. revs.	4	20	15
Hvalrossen	Thornycroft	1884	114	12·6	6·5	1	64	660	18·7	1 mach.	2	14	10
Makrelen	Copenhagen	1893	140	14·2	7	2	112	1,200	..	..	..	..	16
Narhvalen	Thornycroft	1888	137·9	14	7	1	94	1,200	22·3	2 1-pr. revs.	4	20	15
Nord Kaperen.. ..	Copenhagen	1893	140	14·2	7	2	112	1,200	..	2 1-pr. revs.	4	..	16
Sölöven	Thornycroft	1887	131	14·8	6·8	1	89	1,200	23·3	2 mach.	4	20	14
Söulven	Havre.. ..	1880	94·8	10·9	3·9	1	37	450	18·1	..	2	12	5
Springeren	Copenhagen	1891	119	13	4·9	1	81	800	18·3	2 1-pr. revs.	2	20	14
Stören	Thornycroft	1887	131	14·8	6·8	1	89	1,200	23	2 mach.	4	20	14
Sværdfisken	Thornycroft	1881	110	12	6	1	49	600	20·7	1 mach.	2	14	9

Four destroyers and two boats are provided for.

France.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Arbalète	Normand	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Arc	Châlon	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Arquebuse	Normand	1902	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Baliste	Rouen	1903	183·9	20·11	10·3	2	300	6,000	29·4	1-9pr. 6-3prs.	2	62	75
Bélier	Nantes	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Bombarde	Havre (F.&C.)	1903	183·9	20·11	10·3	2	300	6,000	30·5	1-9pr. 6-3prs.	2	62	75
Branlebas	Normand	Bldg.	193·9	21·3	10·3	2	320	5,000	28	1-9prs. 6-3prs.	2	62	84
Carabine	Rochefort	1902	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	75
Carabinier	..	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Carquois	Rochefort	1906	190·3	19·6	10·3	2	335	7,200	30	1–9 pr.	2	62	37
Catapulte	Havre (F.&C.)	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Chasseur	Normand	Bldg.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Claymore	Normand	1906	190·3	20·11	10·3	2	335	6,000	30·3	1-9pr. 6-3prs.	2	62	75
Cognée	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Coutelas	Rochefort	1907	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Dard	Rouen	1903	183·9	20·11	10·3	2	310	6,500	29·4	1-9pr. 6-3prs.	2	62	75
Durandal	Normand	1899	180·5	20·8	10·3	2	300	5,000	28	1-9pr. 6-3prs.	2	62	84
Epée	Havre (F.&C.)	1900	190·3	20·8	10·3	2	335	5,700	26	1-9pr. 6-3prs.	2	62	75
Epieu	Normand	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Escopette	Rochefort	1900	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Etandard	Bordeaux	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Fanion	Bordeaux	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Fanfare	Normand	Bldg.	193·9	21·3	10·3	2	320	5,000	28	1-9pr. 6-3prs.	2	62	84
Fauconneau	..	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Flamberge	Rochefort	1901	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Fleuret	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Francisque	Rochefort	1904	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	75
Fronde	Bordeaux	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	65
Gabion	Rouen	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Glaive	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Grenadier	..	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Hache	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Hallebarde	Normand	1899	180·5	20·8	10·3	2	305	5,300	27·2	1-9pr. 6-3prs.	2	62	84
Harpon	Bordeaux	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Hussar	..	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Javeline	Nantes	1903	183·9	20·11	10·3	2	300	7,000	29·3	1-9pr. 6-3prs.	2	62	75
Massue	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Mortier	Rochefort	1906	190·3	20·11	10·3	2	335	6,300	28	1-9pr. 6-3prs.	2	62	75
Mousquet	Nantes	1902	183·9	20·11	10·3	2	300	6,300	30·2	1-9pr. 6-3prs.	2	62	75
Mousqueton	Châlon	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Obusier	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,300	28	1-9pr. 6-3prs.	2	62	75
Oriflamme	Nantes	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Pertuisane	Rochefort	1900	183·9	20·8	10.3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Pierrier	Rochefort	1906	190·3	20·11	10.3	2	335	6,300	28	1-9pr. 63-prs.	2	62	75
Pique	Havre (F.&C.)	1900	190·3	20·8	10.3	2	335	5,700	26	1-9pr. 6-3prs	2	62	75
Pistolet	Nantes	1903	183·9	20·11	10.3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Poignard	Rochefort	Bldg.	190·3	20·11	10.3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Rapière	Rochefort	1901	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Sabre	Rochefort	1904	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	75
Sabretache	Nantes	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Sagaïe	Havre (F.&C.)	1902	183·9	20·11	10·3	2	300	6,000	30·1	1-9pr. 6-3prs.	2	62	75
Sape	Rouen	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Sarbacane	Rochefort	1903	183·9	20·11	10·3	2	305	6,300	28	1-9pr 6-3prs.	2	62	75
Spahi	..	Pro.	210·6	21·9	..	..	430	..	28	5–9 prs.	3	..	..
Stylet	Rochefort	1905	190·3	20·11	10·3	2	335	6,300	..	1-9pr. 6-3prs.	2	62	75
Takou *	Elbing	1898	193·7	21·0	..	2	280	6,000	25	6–3 pr. Q.F.	2	62	67
Tirailleur	Bordeaux	Bldg.	206·9	21·8	9·7	3	410	7,800	28	6-9 pr.	2	..	48
Tromblon	Rochefort	1905	190·3	21·0	..	2	335	6,300	25	6-3 pr. Q.F.	2	62	67
Trident	Rochefort	Bldg.	190·3	19·6	10·3	2	335	7,200	30	1-9 pr.	2	62	37
Voltigeur	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Yatagan	Nantes	1900	190·3	20·8	10·3	2	335	5,700	26	1-9pr. 6-3prs.	2	62	33
M 61-65 (6)	..	Pro.	190·3	20·11	10·3	2	350	6,800	28	1-9pr. 6-3prs.	2		
SEA-GOING—													
Agile	La Seyne	1889	139	14·7	7·7	2	121	1,100	20·4	3–3 prs.	2	26	14
Alarme	St. Nazaire	1889	151	15·7	8·3	2	169	1,400	20·5	2–3 prs.	4	30	40
Aquilon	Normand	1895	137·8	14·6	7·9	2	127	2,000	26·17	2–3 prs.	2	34	17
Archer	Normand	1893	138	14·7	6·5	2	131	1,250	21	2–3 prs.	2	26	17
Argonaute	St. Denis	1893	141	16·4	9·3	2	132	1,500	25·1	2–3 prs.	2	34	16
Audacieux	Nantes	1900	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Aventurier	St. Nazaire	1889	151	15·7	8·3	2	174	1,400	20·5	2–3 prs.	4	34	40
Averne	Havre (F.&C.)	1894	141	16·4	9·3	2	133	1,500	24·4	2–3 prs.	2	27	16
Borée	Bordeaux	1900	147·7	16·7	8·0	2	160	4,400	30	2–3 prs.	2	..	18
Bourrasque	Normand	1901	147·7	16·7	8·0	2	160	4,400	31·41	2–3 prs.	2	..	18
Chevalier	Normand	1893	144·3	15·7	6·8	2	134	2,700	27·2	2–1 prs.	2	32	17
Corsaire	St. Denis	1893	160·5	15	5·4	2	171	2,500	25·5	4–1 prs.	2	32	15
Coureur	Chiswick	1888	147·5	14·5	4·6	2	129	1,550	23·28	4 Nords.	2	27	22
Cyclone	Normand	1898	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	2	..	18
Dauphin	Havre (F.&C.)	1894	141	16·4	9·3	2	137	1,500	25·22	2–3 prs.	2	34	16
Défi	St. Nazaire	1889	151	15·7	8·3	2	173	1,400	21	2–3 prs.	4	30	40
Dragon	Normand	1892	138	14·7	8·2	2	129	1,400	25	2–3 prs.	2	26	15·5
Eclair	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·5	3–3 prs.	2	26	17
Flibustier	Normand	1894	143	16·4	9·3	2	132	1,500	23·5	2–3 prs.	2	34	16
Forban	Normand	1895	144·2	15·2	10	2	135	3,200	31·2	2–1 prs.	2	..	..
Grenadier	Normand	1892	138	14·7	8·2	2	129	1,400	25·25	2–3 prs.	2	26	15·5
Grondeur	Havre (F.&C.)	1892	147·5	14·5	5	2	130	1,550	24	2–3 prs.	2	27	20
Kabyle	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·6	3–3 prs.	2	27	17
Lancier	Normand	1893	138	14·7	8·2	2	128	1,400	25·79	2–3 prs.	2	26	15·5

* Captured from the Chinese at Taku, 1900.

N.B.—"F. & C." "Forges et Chantiers." "Normand" means that the boat has been built at that firm's yard at Havre.

France—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions. Length.	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
SEA-GOING—*cont.*													
Mangini	Nantes	1896	147·6	14·8	7·9	2	129	2,100	27·5	2–3 prs.	2	34	17
Mistral	Normand	1901	147·7	16·8	8·8	2	182	4,200	30	2–3 prs.	3	..	23
Mousquetaire	Havre (F.&C.)	1892	154	15·7	7	2	150	2,100	24·77	2–1 prs.	2	32	18
Orage	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·7	3–3 prs.	2	26	17
Ouragan	Nantes	1887	151	15·7	8·3	2	174	1,400	20	2–3 prs.	4	30	40
Rafale	Normand	1901	147·7	16·7	8·0	2	160	4,400	31·47	2–3 prs.	2	..	18
Sarrasin	Bourdeaux	1893	139	14·7	7·7	2	131	1,100	20·5	3–3 prs.	2	26	14
Simoun	Havre (F.&C.)	1901	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Siroco	Normand	1901	147·7	16·8	8·8	2	182	4,200	30	2–3 prs.	3	..	23
Téméraire	St. Nazaire	1889	151	15·7	8·3	2	174	1,400	21	2–3 prs.	4	30	40
Tourbillon	Bourdeaux	1892	139	14·7	7·7	2	131	1,100	20·5	3–3 prs.	2	26	14
Tourmente	St. Denis	1893	141	16·4	9·3	..	132	1,500	21·6	2–3 prs.	2	25	15
Tramontane	Bordeaux	1900	147·7	16·7	8·0	2	160	4,400	30	2–3 prs.	2	..	18
Trombe	Nantes	1900	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Turco	St. Denis	1892	138	14·7	8·2	2	124	1,400	21·3	2–3 prs.	2	26	15·5
Typhon	Havre (F.&C.)	1901	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Véloce	Havre (F.&C.)	1892	147·5	14·5	5	2	130	1,550	23·6	2–3 prs.	2	27	20
Zouave	St. Denis	1892	138	14·7	8·2	2	124	1,400	21·3	2–3 prs.	2	26	15·5
FIRST CLASS—													
126–129 (4 boats)	Normand	1889–0	118	13·2	8·6	1	80	1,250	21	2–1 prs.	2	21	10
145–149 (5 boats)	Normand	1891–3	118	13·2	8·7	1	79	1,300	23·9	2–1 prs.	2	21	10
152–154 (3 boats)	Normand	1892–3	118	13·2	8·7	1	80	1,300	24·6	2–1 prs.	2	21	10
155–157 (3 boats)	Bordeaux	1893	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
158–160 (3 boats)	Cail	1893	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
161–163 (3 boats)	St. Nazaire	1892	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
164–166 (3 boats)	La Seyne	1892	118	13·2	8·7	1	79	1,300	23	2–1 prs.	2	21	10
167–169 (3 boats)	Creusot	1892	118	13·2	8·7	1	81	1,300	23	2–1 prs.	2	21	10
170, 171 (2 boats)	Normand	1893	118	13·2	8·7	1	80	1,300	23–24	2–1 prs.	2	21	10
172, 173 (2 boats)	Havre	1893–4	118	13·2	8·7	1	89	1,390	23–24	2–1 prs.	2	21	10
174–176 (3 boats)	Havre	1893–5	118	13·2	8·7	1	94	1,390	23–24	2–1 prs.	2	21	10
177–179 (3 boats)	Havre	1893	118	13·2	8·7	1	79	1,300	23–24	2–1 prs.	2	21	10
180–187 (8 boats)	Normand etc.	1894–5	118	13·2	8·6	1	80	1,500	25·7	2–1 prs.	2	21	10
188–191 (4 boats)	Havre, etc.	1893–4	118	13·2	8·6	1	80	1,500	24–2	2–1 prs.	2	21	10
192–194 (3 boats)	Havre, etc.	1894–5	118	13·2	8·6	1	82	1,300	23·55	2–1 prs.	2	21	10
195–200 (6 boats)	Havre, etc.	1894–5	319	13·2	8·7	1	80	1,300	23·5	2–1 prs.	2	21	10
201–205 (5 boats)	Normand	1897–8	121·4	13·4	8·6	1	84	1,700	25·9	2–1 prs.	2	23	10
206–211 (6 boats)	Bordeaux	1897–8	121·4	13·6	8·6	1	86	1,500	23·5	2–1 prs.	2	23	10
212–215 (4 boats)	Normand	1899	121·4	13·6	8·6	1	86	1,800	27	2–1 prs.	2	23	10
216–226 (11 boats)	Cherbourg, Toulon, etc.	1899–1902	121·6	13·6	8·6	1	86	1,500	23·5	2–1 prs.	2	23	10
227–235 (9 boats)	Bordeaux, etc.	1901	121·4	13·2	8·7	1	86	1,500	23·5	2–1 prs.	2	23	10
236–255 (20 boats)	Bordeaux, etc.	1902	121·4	13·2	8·7	1	90	1,500	23·5	2–1 prs.	2	23	10
256–257 (2 boats)	Bordeaux etc.	1900	124·8	13·2	8·7	1	97	2,000	26·0	2–1 prs.	3	24	10
258–261 (4 boats)	Bordeaux	1902	124·8	13·2	8·7	1	97	2,000	26·0	2–1 prs.	3	24	10
262–263 (2 boats)	Creusot	1902	124·8	13·2	8·7	1	97	2,000	26·0	2–1 prs.	3	24	10
264–265 (2 boats)	Bordeaux	1902	124·8	13·2	8·7	1	97	2,000	26·0	2–1 prs.	3	24	10
266–276 (11 boats)	Bordeaux, etc.	1902	124·8	13·2	9·6	1	97	2,000	26·0	2–1 prs.	3	24	10
***277–294 (18 boats)**	Bordeaux, etc.	1904	124·8	14·0	9·6	1	97	2,000	26·0	2–1 prs.	3	26	10
295–317 (23 boats)	Normand, etc.	1905	124·8	14·0	9·6	1	97	2,000	26	2–1 prs.	3	26	10
318–367 (50 boats)	Havre, etc.	1905–7											
368–369 (2 boats)	Toulon	1906											
4 boats	Saigon	1905											
SECOND CLASS—													
75–82, 84–87, 89–109 (33 boats)	Cail, etc.	1885–92	114·7	10·6	6	1	54	525	20	2–1 prs.	2	16	10
111–125 (11 boats)	La Seyne, etc.	1885–90	114·7	10·6	6	1	54	525	20	2–1 prs.	2	16	10
130–132, 134–144 (14 boats)	Normand	1890–91	111·5	11·4	6	1	52·8	520	21	2–1 prs.	2	16	10
VEDETTE BOATS—													
(1 boat) (aluminium)	Poplar	1894	62·3	9·1	..	1	14	210	20·5	..	1	8	
A–I (9 boats)	Creusot	1890–94	62·4	8·9	4·9	1	15	210	16·5	..	1	9	
SUBMARINE—													
Aigrette †	Toulon	1904	117·6	12·9	8·3	1	172	200	10·5	..	..	20	..
Algérien	Cherbourg	1901	118	9·2	..	1	146	250	8–13	..	..	9	..
Alose	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Anguille	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Bonite	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Calypso‡	Toulon	Bldg.					344				7	..	..
Castor	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Cigogne†	Toulon	1904	117·6	12·9	8·3	1	172	200	10·5	..	..	20	..
Circé ‡	Toulon	Bldg.					344				7	..	..
Dorade	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Emeraude‡	Cherbourg	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
Espadon‡	Cherbourg	1901	111·6	12·4	5·4	1	106–200	250	8–12	..	2	10	..
Esturgeon	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Farfadet	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Français	Cherbourg	1901	118	9·9	..	1	146	250	8–13	..	..	9	..
Gnome	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Grondin	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Guêpe (Nos. 1 & 2)	Cherbourg	Bldg.					44			..	2	..	..
Gustave Zédé	Toulon	1893	159	12·4	12·4	1	266	220	5–10	..	1	9	..
Gymnote	Mourillon	1888	56·5	5·11	6·0	1	30	55	4–6	..	2	4	..
Korrigan	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Loutre	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..

* No. 293, Havre (Normand); Parsons turbines, 24 knots; No. 294, Brequet turbines. In all, in 1903, 34 boats were ordered—13 of the programme of 1902 and 21 of that of 1903. † Submersible boats, Laubeuf type. ‡ See note on next page.

The Libellule, a turbine-motor vedette torpedo boat, long in hand at Havre (F. & C.), was launched February, 1905.

France.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Arbalète	Normand	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Arc	Châlon	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Arquebuse	Normand	1902	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Baliste	Rouen	1903	183·9	20·11	10·3	2	300	6,000	29·4	1-9pr. 6-3prs.	2	62	75
Bélier	Nantes	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Bombarde	Havre (F.&C.)	1903	183·9	20·11	10·3	2	300	6,000	30·5	1-9pr. 6-3prs.	2	62	75
Branlebas	Normand	Bldg.	183·9	21·3	10·3	2	320	5,000	28	1-9prs. 6-3prs.	2	62	84
Carabine	Rochefort	1902	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	75
Carabinier	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Carquois	Rochefort	1906	190·3	19·6	10·3	2	335	7,200	30	1-9 pr.	2	62	37
Catapulte	Havre (F.&C.)	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Chasseur	Normand	Bldg.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Claymore	Normand	1906	190·3	20·11	10·3	2	335	6,000	30·3	1-9pr. 6-3prs.	2	62	75
Cognée	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Coutelas	Rochefort	1907	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Dard	Rouen	1903	183·9	20·11	10·3	2	310	6,500	29·4	1-9pr. 6-3prs.	2	62	75
Durandal	Normand	1899	180·5	20·8	10·3	2	300	5,000	28	1-9pr. 6-3prs.	2	62	84
Epée	Havre (F.&C.)	1900	190·3	20·8	10·3	2	335	5,700	26	1-9pr. 6-3prs.	2	62	75
Epieu	Normand	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Escopette	Rochefort	1900	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Etandard	Bordeaux	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Fanion	Bordeaux	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Fanfare	Normand	Bldg.	193·9	21·3	10·3	2	320	5,000	28	1-9pr. 6-3prs.	2	62	84
Fauconneau	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Flamberge	Rochefort	1901	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Fleuret	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Francisque	Rochefort	1904	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	76
Fronde	Bordeaux	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	65
Gabion	Rouen	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Glaive	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Grenadier	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Hache	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Hallebarde	Normand	1899	180·5	20·8	10·3	2	305	5,300	27·2	1-9pr. 6-3prs.	2	62	84
Harpon	Bordeaux	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Hussar	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Javeline	Nantes	1903	183·9	20·11	10·3	2	300	7,000	29·3	1-9pr. 6-3prs.	2	62	75
Massue	Toulon	Bldg.	190·3	20·11	10·3	2	335	6,000	28	1-9pr. 6-3prs.	2	62	75
Mortier	Rochefort	1906	190·3	20·11	10·3	2	335	6,300	28	1-9pr. 6-3prs.	2	62	75
Mousquet	Nantes	1902	183·9	20·11	10·3	2	300	6,300	30·2	1-9pr. 6-3prs.	2	62	75
Mousqueton	Châlon	1903	183·9	20·11	10·3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Obusier	Rochefort	Bldg.	190·3	20·11	10·3	2	335	6,300	28	1-9pr. 6-3prs.	2	62	75
Oriflamme	Nantes	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Pertuisane	Rochefort	1900	183·9	20·8	10.3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Pierrier	Rochefort	1906	190·3	20·11	10.3	2	335	6,300	28	1-9pr. 63-prs.	2	62	75
Pique	Havre (F.&C.)	1900	190·3	20·8	10.3	2	335	5,700	26	1-9pr. 6-3prs	2	62	75
Pistolet	Nantes	1903	183·9	20·11	10.3	2	300	6,000	28	1-9pr. 6-3prs.	2	62	75
Poignard	Rochefort	Bldg.	190·3	20·11	10.3	2	335	6,000	28	1-9pr. 6 3prs.	2	62	75
Rapière	Rochefort	1901	183·9	20·8	10·3	2	300	5,700	26	1-9pr. 6-3prs.	2	62	75
Sabre	Rochefort	1904	183·9	20·11	10·3	2	305	6,300	28	1-9pr. 6-3prs.	2	62	75
Sabretache	Nantes	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Sagaie	Havre (F.&C.)	1902	183·9	20·11	10·3	2	300	6,000	30·1	1-9pr. 6-3prs.	2	62	75
Sape	Rouen	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Sarbacane	Rochefort	1903	183·9	20·11	10·3	2	305	6,300	28	1-9pr 6-3prs.	2	62	75
Spahi	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Stylet	Rochefort	1905	190·3	20·11	10·3	2	335	6,300	..	1-9pr. 6-3prs.	2	62	75
Takou *	Elbing	1898	193·7	21·0	..	2	280	6,000	25	6-3 pr. Q.F.	2	62	67
Tirailleur	Bordeaux	Bldg.	206·9	21·8	9·7	3	410	7,800	28	6-9 pr.	2	..	48
Tromblon	Rochefort	1905	190·3	21·0	..	2	335	6,300	25	6-3 pr. Q.F.	2	62	67
Trident	Rochefort	Bldg.	190·3	19·6	10·3	2	335	7,200	30	1-9 pr.	2	62	37
Voltigeur	..	Pro.	210·6	21·9	..	..	430	..	28	5-9 prs.	3	..	..
Yatagan	Nantes	1900	190·3	20·8	10·3	2	335	5,700	26	1-9pr. 6-3prs.	2	62	33
M 61-65 (6)	..	Pro.	190·3	20·11	10·3	2	350	6,800	28	1-9pr. 6-3prs.	2		
SEA-GOING—													
Agile	La Seyne	1889	139	14·7	7·7	2	121	1,100	20·4	3-3 prs.	2	26	14
Alarme	St. Nazaire	1889	151	15·7	8·3	2	169	1,400	20·5	2-3 prs.	4	30	40
Aquilon	Normand	1895	137·8	14·6	7·9	2	127	2,000	26·17	2-3 prs.	2	34	17
Archer	Normand	1893	138	14·7	6·5	2	131	1,250	21	2-3 prs.	2	26	17
Argonaute	St. Denis	1893	141	16·4	9·3	2	132	1,500	25·1	2-3 prs.	2	34	16
Audacieux	Nantes	1900	144·2	15·2	10·0	2	152	4,200	30	2-3 prs.	3	..	18
Aventurier	St. Nazaire	1889	151	15·7	8·3	2	174	1,400	20·5	2-3 prs.	4	34	40
Averne	Havre (F.&C.)	1894	141	16·4	9·3	2	133	1,500	24·4	2-3 prs.	2	27	16
Borée	Bordeaux	1900	147·7	16·7	8·0	2	160	4,400	30	2-3 prs.	2	..	18
Bourrasque	Normand	1901	147·7	16·7	8·0	2	160	4,400	31·41	2-3 prs.	2	..	18
Chevalier	Normand	1893	144·3	15·7	6·8	2	134	2,700	27·2	2-1 prs.	2	32	17
Corsaire	St. Denis	1893	160·5	15	5·4	2	171	2,500	25·5	4-1 prs.	2	32	15
Coureur	Chiswick	1888	147·5	14·5	4·6	2	129	1,550	23·28	4 Nords.	2	27	22
Cyclone	Normand	1898	144·2	15·2	10·0	2	152	4,200	30	2-3 prs.	2	..	18
Dauphin	Havre (F.&C.)	1894	141	16·4	9·3	2	137	1,500	25·22	2-3 prs.	2	34	16
Défi	St. Nazaire	1889	151	15·7	8·3	2	173	1,400	21	2-3 prs.	4	30	40
Dragon	Normand	1892	138	14·7	8·2	2	129	1,400	25	2-3 prs.	2	26	15·5
Eclair	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·5	3-3 prs.	2	26	17
Flibustier	Normand	1894	143	16·4	9·3	2	132	1,500	23·5	2-3 prs.	2	34	16
Forban	Normand	1895	144·2	15·2	10	2	135	3,200	31·2	2-1 prs.	2	..	..
Grenadier	Normand	1892	138	14·7	8·2	2	129	1,400	25·25	2-3 prs.	2	26	15·5
Grondeur	Havre (F.&C.)	1892	147·5	14·5	5	2	130	1,550	24	2-3 prs.	2	27	20
Kabyle	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·6	3-3 prs.	2	27	17
Lancier	Normand	1893	138	14·7	8·2	2	128	1,400	25·79	2-3 prs.	2	26	15·5

* Captured from the Chinese at Taku, 1900. N.B.—"F. & C." "Forges et Chantiers."

"Normand" means that the boat has been built at that firm's yard at Havre.

France—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
Sea-Going—*cont.*													
Mangini	Nantes	1896	147·6	14·8	7·9	2	129	2,100	27·5	2–3 prs.	2	34	17
Mistral	Normand	1901	147·7	16·8	8·8	2	182	4,200	30	2–3 prs.	3	..	23
Mousquetaire	Havre (F.&C.)	1892	154	15·7	7	2	150	2,100	24·77	2–1 prs.	2	32	18
Orage	La Seyne	1891	144·3	14·7	7·7	2	128	1,100	21·7	3–3 prs.	2	26	17
Ouragan	Nantes	1887	151	15·7	8·3	2	174	1,400	20	2–3 prs.	4	30	40
Rafale	Normand	1901	147·7	16·7	8·0	2	160	4,400	31·47	2–3 prs.	2	..	18
Sarrasin	Bourdeaux	1893	139	14·7	7·7	2	131	1,100	20·5	3–3 prs.	2	26	14
Simoun	Havre (F.&C.)	1901	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Siroco	Normand	1901	147·7	16·8	8·8	2	182	4,200	30	2–3 prs.	3	..	23
Téméraire	St. Nazaire	1889	151	15·7	8·3	2	174	1,400	21	2–3 prs.	4	30	40
Tourbillon	Bourdeaux	1892	139	14·7	7·7	2	131	1,100	20·5	3–3 prs.	2	26	14
Tourmente	St. Denis	1893	141	16·4	9·3	..	132	1,500	21·6	2–3 prs.	2	25	15
Tramontane	Bordeaux	1900	147·7	16·7	8·0	2	160	4,400	30	2–3 prs.	2	..	18
Trombe	Nantes	1900	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Turco	St. Denis	1892	138	14·7	8·2	2	124	1,400	21·3	2–3 prs.	2	26	15·5
Typhon	Havre (F.&C.)	1901	144·2	15·2	10·0	2	152	4,200	30	2–3 prs.	3	..	18
Véloce	Havre (F.&C.)	1892	147·5	14·5	5	2	130	1,550	23·6	2–3 prs.	2	27	20
Zouave	St. Denis	1892	138	14·7	8·2	2	124	1,400	21·3	2–3 prs.	2	26	15·5
First Class—													
126–129 (4 boats)	Normand	1889-0	118	13·2	8·6	1	80	1,250	21	2–1 prs.	2	21	10
145–149 (5 boats)	Normand	1891-3	118	13·2	8·7	1	79	1,300	23·9	2–1 prs.	2	21	10
152–154 (3 boats)	Normand	1892-3	118	13·2	8·7	1	80	1,300	24·6	2–1 prs.	2	21	10
155–157 (3 boats)	Bordeaux	1893	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
158–160 (3 boats)	Cail	1893	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
161–163 (3 boats)	St. Nazaire	1892	118	13·2	8·7	1	80	1,300	23	2–1 prs.	2	21	10
164–166 (3 boats)	La Seyne	1892	118	13·2	8·7	1	79	1,300	23	2–1 prs.	2	21	10
167–169 (3 boats)	Creusot	1892	118	13·2	8·7	1	81	1,300	23	2–1 prs.	2	21	10
170, 171 (2 boats)	Normand	1893	118	13·2	8·7	1	80	1,300	23–24	2–1 prs.	2	21	10
172, 173 (2 boats)	Havre	1893–4	118	13·2	8·7	1	89	1,390	23–24	2–1 prs.	2	21	10
174–176 (3 boats)	Havre	1893–5	118	13·2	8·7	1	94	1,390	23-24	2–1 prs.	2	21	10
177–179 (3 boats)	Havre	1893	118	13·2	8·7	1	79	1,300	23–24	2–1 prs.	2	21	10
180–187 (8 boats)	Normand etc.	1894–5	118	13·2	8·6	1	80	1,500	25·7	2–1 prs.	2	21	10
188–191 (4 boats)	Havre, etc.	1893–4	118	13·2	8·6	1	80	1,500	24–2	2–1 prs.	2	21	10
192–194 (3 boats)	Havre, etc.	1894–5	118	13·2	8·6	1	82	1,300	23·55	2–1 prs.	2	21	10
195-200 (6 boats)	Havre, etc.	1894-5	319	13·2	8·7	1	80	1,300	23·5	2–1 prs.	2	21	10
201–205 (5 boats)	Normand	1897–8	121·4	13·4	8·6	1	84	1,700	25·9	2–1 prs.	2	23	10
206–211 (6 boats)	Bordeaux	1897–8	121·4	13·6	8·6	1	86	1,500	23·5	2–1 prs.	2	23	10
212–215 (4 boats)	Normand	1899	121·4	13·6	8·6	1	86	1,800	27	2–1 prs.	2	23	10
216–226 (11 boats)	Cherbourg, Toulon, etc.	1899–1902	121·6	13·6	8·6	1	86	1,500	23·5	2–1 prs.	2	23	10
227-235 (9 boats)	Bordeaux, etc.	1901	121·4	13·2	8·7	1	86	1,500	23·5	2-1 prs.	2	23	10
236–255 (20 boats)	Bordeaux, etc.	1902	121·4	13·2	8·7	1	90	1,500	23·5	2-1 prs.	2	23	10
256–257 (2 boats)	Bordeaux etc.	1900	124·8	13·2	8·7	1	97	2,000	26·0	2-1 prs.	3	24	10
258–261 (4 boats)	Bordeaux	1902	124·8	13·2	8·7	1	97	2,000	26·0	2-1 prs.	3	24	10
262–263 (2 boats)	Creusot	1902	124·8	13·2	8·7	1	97	2,000	26·0	2-1 prs.	3	24	10
264–265 (2 boats)	Bordeaux	1902	124·8	13·2	8·7	1	97	2,000	26·0	2-1 prs.	3	24	10
266–276 (11 boats)	Bordeaux, etc.	1902	124·8	13·2	9·6	1	97	2,000	26·0	2-1 prs.	3	24	10
***277–294 (18 boats)**	Bordeaux, etc.	1904	124·8	14·0	9·6	1	97	2,000	26·0	2-1 prs.	3	26	10
295–317 (23 boats)	Normand, etc.	1905	124·8	14·0	9·6	1	97	2,000	26	2-1 prs.	3	26	10
318–367 (50 boats)	Havre, etc.	1905-7											
368–369 (2 boats)	Toulon	1906											
4 boats	Saigon	1905											
Second Class—													
75–82, 84–87, 89–109 (33 boats)	Cail, etc.	1885–92	114·7	10·6	6	1	54	525	20	2–1 prs.	2	16	10
111–125 (11 boats)	La Seyne, etc.	1885–90	114·7	10·6	6	1	54	525	20	2–1 prs.	2	16	10
130–132, 134–144 (14 boats)	Normand	1890–91	111·5	11·4	6	1	52·8	520	21	2–1 prs.	2	16	10
Vedette Boats—													
(1 boat) (aluminium)	Poplar	1894	62·3	9·1	..	1	14	210	20·5	..	1	8	
A–I (9 boats)	Creusot	1890-94	62·4	8·9	4·9	1	15	210	16·5	..	1	9	
Submarine—													
Aigrette †	Toulon	1904	117·6	12·9	8·3	1	172	200	10·5	..	..	20	..
Algérien	Cherbourg	1901	118	9·2	..	1	146	250	8-13	..	..	9	..
Alose	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Anguille	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Bonite	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Calypso‡	Toulon	Bldg.					344				7	..	..
Castor	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Cigogne†	Toulon	1904	117·6	12·9	8·3	1	172	200	10·5	..	..	20	..
Circé ‡	Toulon	Bldg.					344				7	..	..
Dorade	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Emeraude‡	Cherbourg	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
Espadon‡	Cherbourg	1901	111·6	12·4	5·4	1	106–200	250	8–12	..	2	10	..
Esturgeon	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Farfadet	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Français	Cherbourg	1901	118	9·9	..	1	146	250	8–13	..	..	9	..
Gnome	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Grondin	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Guêpe (Nos. 1 & 2)	Cherbourg	Bldg.					44			..	2	..	..
Gustave Zédé	Toulon	1893	159	12·4	12·4	1	266	220	5–10	..	1	9	..
Gymnote	Mourillon	1888	56·5	5·11	6·0	1	30	55	4-6	..	2	4	..
Korrigan	Rochefort	1901	135·8	9·5	9·5	1	185	..	8–12½	..	..	9	..
Loutre	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..

---

* No. 293, Havre (Normand); Parsons turbines, 24 knots; No. 294, Brequet turbines. In all, in 1903, 34 boats were ordered—13 of the programme of 1902 and 21 of that of 1903. † Submersible boats, Laubeuf type. ‡ See note on next page.

The Libellule, a turbine-motor vedette torpedo boat, long in hand at Havre (F. & C.), was launched February, 1905.

France—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
SUBMARINE—*contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Ludion	Cherbourg	1902	77	7·6	8·0	1	68	60	8	..	..	5	..
Lutin	Rochefort	1903	135·8	9·5	9·5	1	185	..	8–12¼	..	..	9	..
Lynx	Cherbourg	1902	77	7·6	8·0	1	68	60	8	..	..	5	..
Méduse	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Morse	Cherbourg	1899	118	9·0	9·0	1	144	360	8–12·3	..	1	9	..
Naïade	Cherbourg	1902	77	7·6	8·0	1	68	60	8	..	..	5	..
Narval‡	Cherbourg	1899	111·6	12·4	5·4	1	106–206	250	8–12	..	2	9	..
Opale‡	Cherbourg	1906	146	12·9	12·0	2	390	600	12	..	6	..	..
Otarie	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Oursin	Rochefort	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Perle	Cherbourg	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Phoque	Rochefort	1904	77	7·6	8·0	1	68	60	8	..	..	5	..
Protée	Cherbourg	1902	77	7·6	8·0	1	68	60	8	..	..	5	..
Rubis‡	Cherbourg	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
Saphir‡	Toulon	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
Silure‡	Cherbourg	1901	111·6	12·4	5·4	1	106–200	250	8–12	..	2	10	..
Sirène‡	Cherbourg	1901	111·6	12·4	5·4	1	106–200	250	8–12	..	2	10	..
Souffleur	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Thon	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Topaze‡	Cherbourg	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
Triton‡	Cherbourg	1901	111·6	12·4	5·4	1	106–200	250	8–12	..	2	10	..
Truite	Toulon	1903	77	7·6	8·0	1	68	60	8	..	..	5	..
Turquoise‡	Toulon	Bldg.	146	12·9	12·0	2	390	600	12	..	6	..	..
X ‡	Cherbourg	1904	122·8	10·2	7·6	2	168	220	10½	..	..	..	..
Y ‡	Toulon	1905	142·8	9·10	9·10	1	213	250	11	..	..	..	..
Z ‡	Rochefort	1904	135·8	9·10	9·10	1	202	190	11	..	..	..	..
Omega	Toulon	1905	160·6	13·9	9.0	1	301	330	11	..	4	20	..
Q 51–60‡ (10)	Cherbourg	Bldg.	160	16·4	13·6	2	398	700	12	..	7	24	..
Q 62–66‡ (5)	Rochefort												
Q 67–69‡ (3)	Toulon												
Q 70–74‡ (5)	Cherbourg	Pro.	160	16·4	13·6	2	398	700	12	..	7	24	..
Q 75–79‡ (5)	Rochefort												
Q 80–89‡ (10)	Toulon												
Q 90–99‡ (10)	..	Pro.	..	..	..	..	..	..	..	..	..	..	..
A ‡	Cherbourg	Pro.	197	..	..	..	577–810	..	10–15	..	..	..	..
B ‡	Cherbourg	Pro,	210	..	..	..	530–623	..	10–15	..	..	..	..
C ‡	Rochefort	Pro.	184	..	..	..	550–735	..	10–15	..	..	..	..

‡ Submersible boats.

Germany.

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
D 3, D 4 (2 boats)	Elbing	1888	184	21·8	9·6	2	300	2,000	20	4 6-pr. Q.F. 2 1-pr. revs.	3	48	90
D 5, D 6 (2 boats)	Elbing	1888–9	190·3	23	9·6	2	320	3,000	22½	4 6-pr. Q.F. 2 1-pr. revs.	3	48	90
D 7, D 8 (2 boats)	Elbing	1890	190·3	23	9·9	2	380	3,500	22½	6 Q.F.	3		
D 9	Elbing	1894	197·0	24·3	9·9	2	380	4,500	26	6 Q.F.	3		
D 10	Chiswick	1898	211·9	19·6	8·1	2	310	5,800	28·5	5 3-pr. Q.F.	3	52	80
D 11, D 12	Chiswick	1900	218·6	20·9	8·7	2	333	7,000	31	1 12-pr. 5 6-prs.	2	59	40
S 90–101	Elbing	1900	200	23	8·9	2	350	6,000	27·5	3 3-pr. Q.F.	3		
S 102–107	Elbing	1901	200	23	8·9	2	350	6,000	27·5	3 3-pr. Q.F.	3		
G 108–113	Kiel(Germania)	1901–2	200	22	8·9	2	350	6,000	29·2	3 3-pr. Q.F.	3	49	100
S 114–119	Elbing	1903	200	23	8·9	2	350	6,000	29·2	3 3-pr. Q.F.	3	49	100
S 120–125	Elbing	1904–5	200	23	8·9	2	350	6,000	29·2	3 3-pr. Q.F.	3	49	100
S 126-131*	Elbing	1904–5	205	23	..	2	420	6,000	30	3 6-pr.	3	56	100
G 132–136	Kiel(Germania)	1906	207·4	23	8·9	2	420	6,500	28	4 6-pr.	3	..	..
G 137	Kiel(Germania)	1907	226·4	25·4	9·8	3	560	10,000	30	..			
S 138–149	Elbing	1906–7	..	..	..	..	530	10,000	30	..	..	..	..
Taku (ex Hai Ying)	Elbing	1898	183·7	21·0	..	2	280	6,000	30	6 3-prs.	2	..	67
FIRST CLASS—													
S 42—S 65 (24 boats)	Elbing	1892	150	15·6	6·7	..	85–88	1,600	20–22½	2 1-pr. revs.	2	..	17
S 66—S 73 (8 boats)	Elbing	1893	154·3	16·4	..	2	110 145	1,600	..	..	3		
S 74—S 81 (1 boats)	Elbing	1894	154·3	16·4	..	2	125	1,900	25	..	3		
S 82—S 87 (6 boats)	Elbing	1897–8	158·2	16·9	9·0	2	140	2,300	26	2 1-pr. revs.	3	..	32
G 88—G 89 (2 boats)	Kiel(Germania)	1898	154·3	16·5	..	..	160	2,500	26	2 mach.	3	22	

The Estimates of 1907 provide for the building of two divisions of destroyers (12 boats). A submarine boat 180 tons, 128 ft. long, 8 ft. 10 in. beam, submerged displacement 240 tons, speed 12 and 9 knots, launched at the Germania Yard, August 30, 1905; another in 1906.

* S 125 has Parsons turbines.

Greece.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Naphkratoussa ..	Yarrow ..	1906	220	20·6	7·2	2	350		31	2 12, 4 6-pr.	2	58	80
Thyella													
Storm													
1 other		Bldg.											
Nike..	Stettin (Vulkan)	Bldg.	220	20·6	7·2	2	350	..	30	2 12, 4 6-pr.	2	58	80
Doxa..													
Zolbeis													
6 boats	Stettin ..	1885	128	15·3	5·4	1	85	1,050	19	4 1-pr. revs.	..	20	20
6 boats	Yarrow ..	1881	100	12	4·2	1	48	600	19	2 1-pr. revs.	2	12	9

Italy.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Fulmine	Sestri (Odero)	1898	200	20·4	5·4	2	298	4,800	28	1 12-pr. 3 6-pr. Q.F.	3	43	60
Lampo	Elbing (Schichau)	1899 1901	196·8	21·3	5·8	2	320	6,000	30	1 12-pr. Q.F., 5 6-pr.	2	53	60
Freccia													
Dardo													
Strale													
Euro													
Ostro													
Nembo	Naples (Pattison)	1901 1902	210	19·4	7·6	2	330	6,000	30	1 12-pr. Q.F., 5 6-pr.	2	53	66
Turbine													
Aquilone													
Borea													
Meteoro													
Tuono													
Zefiro	Naples (Pattison)	1904	210	19·4	7·6	2	330	6,000	30	1 12-pr. Q.F., 5 6-pr.	2	53	60
Espero													
Orione	Genoa (Ansaldo)	1905 1906	213·6	20·0	7·6	2	325	6,000	28½	6 6-pr.	3		40
Orsa													
Olympia													
Orfeo													
Bersagliere	Genoa (Ansaldo, Armstrong)	1906 1907	211·6	20·0	7·6	3	344	6,200	28½	4 12-pdr.	3	55	82
Artigliere..													
Granatiere													
Lanciere													
FIRST CLASS—													
5 boats Aquila ..	Elbing ..	1888	152	17·2	7·9	2	130	2,200	26·6	2 3-pr. Q.F., 1 1-pr. Q.F., 1 1-pr. rev.	3	24	40
Sparviero													
Nibbio ..													
Avvoltoio													
Falco ..													
Pellicano	Sestri (Odero)	1899	157·4	19	14·8	2	147	2,700	25	2 3-prs.	2	28	24
Condore	Sestri (Ansaldo)	1898	154·3	16·8	6·9	2	136	2,500	27	2 3-prs.	2	27	16
Sirio	Elbing ..	1905					215						
Sagittario		1906											
Spica		1906											
Scorpione		1905											
Serpente		1905											
Saffo		1906											
Alcione	Odero	1905 1906											
Ardea													
Albatross													
Alorone													
Astore													
Arpia													
Gabbiano	Spezia	Bldg.											
Pegaso	Naples (Pattison)	1905	164	17·4	7·0	2	200	3,000	25·4 26·6	3 3-pr.	3		40
Perseo		1905											
Procione		1905											
Pallade													
Cigno													
Cassiopea	Naples (Pattison)	1906 & Bldg.											
Calliope													
Clio													
Centauro													
Canopo													
SECOND CLASS—													
Nos. 78, 79 (2 boats)	Venice ..	1896	..	..	..	..	..	..	..	..	3	20	24
No. 117	..	1895	131·2	16·4	..	1	85	1,000	..	2 1 pr. Q.F.	2	17	17
Nos. 136–146 (11 boats)	Italy	1893–94	131·2	16·4	..	1	85	1,000	22	2 1-pr. Q.F.	2	17	17
Nos. 147–153 (7 boats)	Italy ..	1894–5	131·2	16·4	..	1	85	1,000	22	2 1-pr. Q.F.	2	17	17
SUBMARINE—													
Delfino	Spezia	1894	78·6	10·1	..	1	111	150	10–12	..	2	12	..
Tritone	Spezia	1902	58·8	..	..	1	..	..	8·5	..	..	5	..
Glauco, Squalo, Narvalo, Otaria, Tricheco	Venice, &c.	1906 1907	90·3	14·3	..	..	150	..	..	..	..	..	..
Unnamed	Muggiano ..	Bldg.	137·9	14·3	..	..	175 220	..	15	..	2	..	..

The new Italian destroyers have Thornycroft water-tube boilers.

Japan.

Name or Number.	Where Built.	Launched.	Dimensions Length.	 Beam.	 Draught.	Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Murakumo	Thornycroft	1898	210·0	19·5	7·2	2	307	5,800	30 to 31	1 12-pr., 5 6-prs.	2	54	80
Shinonome	Thornycroft	1898											
Yugiri	Thornycroft	1898											
Shiranui	Thornycroft	1899											
Kagerou	Thornycroft	1899											
Usugumo	Thornycroft	1900											
Shirakumo	Thornycroft	1901	216·7	20·7	8·3	2	373	7,400	31	1 12-pr., 5 6-prs.	2	59	96
Asashio	Thornycroft	1902											
Ikadsuchi	Yarrow ..	1898	220·0	20·6	9·6	2	311	6,000	31	1 12-pr., 5 6-prs.	2	55	95
Inadsuma	Yarrow ..	1899											
Akebono	Yarrow ..	1899											
Sazanami	Yarrow ..	1899											
Oboro	Yarrow ..	1899	220·3	20·6	9·6	2	311	6,000	31·62	1 12-pr., 5 6-prs.	2	..	90
Niji	Yarrow ..	1899	220·3	20.6	9·6	2	308	6,000	31·15	1 12-pr., 5 6 -prs.	2	..	90
Kasumi	Yarrow ..	1902	220·3	20·6	9·6	2	335	6,000	31	1 12-pr., 5 6-prs.	2	..	..
Asagiri	Yokosuka ..	1902	220·3	20·6	9·6	2	374	6,000	29	1 12-pr., 5 6-prs.	2	..	..
Hurusame	Yokosuka ..	1902											
Murasame	Yokosuka ..	1902											
Yamahiko	Port Arthur	1903	196·9	18·4	11·5	2	250	6,000	27	1 12-pr., 5 3-prs.	2	..	80
Fumizuki	Port Arthur	1903											
Satsuki	St. Petersburg	1902											
Hatsushima	Yokosuka ..	1905	220·3	20·6	9·6	2	374	6,000	29	6 12-pr.	2	..	..
Yayoi	Yokosuka ..	1905											
Kisaragi	Yokosuka ..	1905											
Hibiki	Yokosuka ..	1906											
Wakaba	Yokosuka ..	1905											
Hatsuyuki	Yokosuka ..	1906											
Kamikaze	Yokosuka ..	1905											
Ariake	Yokosuka ..	1905											
Fubuki	Yokosuka ..	1905											
Arare	Yokosuka ..	1905											
Yunagi	Maizuru ..	1906											
Oite	Maizuru ..	1905											
Asakase	Kobe	1905											
Harukase	Kobe	1905											
Shigure	Kobe	1906											
Hatsuharu	Kobe	1906											
Yuguri	Sasebo	1905											
Yudachi	Sasebo	1906											
Mikadzuki	Sasebo	1906											
Nowake	Sasebo	1906											
Uschio	Kure	1905											
Nenohi	Kure	1905											
Shiratsuyu	Nagasaki ..	1906											
Shirayuki	Nagasaki ..	1906											
Matsukase	Nagasaki ..	1906											
Shirotaye	Nagasaki ..	1906											
Asatsuyu	Osaka	Bldg.											
Hayakase	Osaka	1906											
Kikutsuki	Uraga	Bldg.											
Minatsuki	Uraga	Bldg.											
Nagatsuki	Uraga	1906											
Utsuki	Uraga	Bldg.											
FIRST CLASS—													
Hayabusa	Normand ..	1898	147·7	16·0	8 2	2	150	4,200	30	1 6-pr., 2 3-prs.	3	26	30
Kasasagi	Normand ..	1899											
Manadzuru	Normand ..	1899											
Chidori	Normand ..	1900											
Shirataka	Elbing ..	1899	147·7	16·0	8·2	2	150	4,200	27	1 6-pr., 2 3-prs.	3	26	30
Aoataka	Kure	1903											
Hato	Kure	1903											
Hibari	Kure	1903											
Kari	Kure	1903											
Kiji	Kure	1903											
Tsubame	Kure	1903											
Hashitaka	Kawasaki ..	1902											
Kamone	Kure	1904											
Otori	Kawasaki ..	1904											
Sagi	Kure	1902											
Uzuri	Kure	1902											
Fukuriu	Kiel . ..	1895	..	..	..	..	115	..	..	..	..	..	..
SECOND CLASS—													
2 boats	Kobe	1901	..	..	..	..	83	..	..	..	..	..	..
10 boats	Yarrow ..	1900	152·6	15·3	7·9	..	..	1,900	27	2 3-prs	3	..	36
16 boats	Elbing ..	1891–9	..	..	..	..	..	..	..	..	..	..	..
13 boats	Creusot ..	1889	114·7	10·6	6	2	56	525	20	2 1-prs.	..	16	50
7 boats	Kobe	1889	114·7	10·6	6	1	56	525	20	2 1-prs.	..	16	
1 boat (No. 24) ..	Normand ..	1891	118	13·1	6·9	1	80	1,200	23	2 1-prs.	2	21	10
2 boats	Normand ..	1898	121·4	13·6	8·6	1	86	1,800	27	1 3-pr.	2	..	10

Five submarine boats, 150 tons displacement, have been built, and two are building.

Mexico.

Mexico has four first-class boats building or projected.

Netherlands.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
First Class—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Ardjoeno	Yarrow	1886	125	13	6	1	83	80	21	2 1-prs.	2	16	10
Batok	Amsterdam	1887	125	13	6·9	1	83	725	20	2 1-prs.	2	16	10
Cycloop	Amsterdam	1887	125	13	6·9	1	83	680	20	2 1-prs.	2	16	10
Dempo	Amsterdam	1887	125	13	6·9	1	83	760	20	2 1-prs.	2	16	10
Empong	Yarrow	1888	128	13	6·2	1	91	1,100	24·1	2 1-prs.	3	16	15
Etna	Yarrow	1882	100	12·6	5·6	1	45	550	21·5	2 1-prs.	2	16	7
Foka	Amsterdam	1888	128	13	6·2	1	90	1,000	22·1	2 1-prs.	3		
Goentoer	Amsterdam	1888	128	13	6·2	1	90	950	21	2 1-prs.	3		
Habang	Amsterdam	1888	128	13	6·2	1	90	930	21·7	2 1-prs.	3		
Hekla	Yarrow	1882	100	12·6	5·6	1	45	550	21·5	2 1-prs.	2	16	7
Idjen	Amsterdam	1889	128	13	6·2	1	90	840	20·6	2 1-prs.	3		
Krakatau	Amsterdam	1889	128	13	6·2	1	90	750	19·1	2 1-prs.	3		
Lamongan	Amsterdam	1890	104·5	13·3	5·2	1	50	790	20·7	2 1-prs.	2		
Makjan	Amsterdam	1890	104·5	13·3	5·2	1	50	790	20·7	2 1-prs.	2		
Nobo	Amsterdam	1890	104·5	13·3	5·2	1	50	790	20·7	2 1-prs.	2		
Scylla	Yarrow	1900	130	13·6	6·0	1	77	1,200	24·3	2 1-prs.	3	18	20
Hydra	Yarrow	1900	130	13·6	6·0	1	77	1,200	24·4	2 1 prs.	3	18	20
Ophir	Yarrow	1901	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Pangrango	Yarrow	1901	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Rindjani	Yarrow	1901	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Smeroe	Fijenoord	1904	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Tangka	Fijenoord	1904	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Wajang	Fijenoord	1904	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Minotaurus, Python	Flushing	1901	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
Zeeslang Krokochl Draak Sfinx Scylla	Flushing	1905	152·6	15·3	7·9	1	130	1,900	27	2 3-prs.	2	25	36
2 Ophir type	..	Pro.	152·6	15·3	7·9	1	130	1,900	27	2 2-prs.	2	25	36
Meijndert Jentjes Johau van Brakel Van de Rijn Willem Willemsze	Flushing, Rotterdam, & Fijenoord	1904	154·3	16·5	7·9	1	144	2,000	25	2 3-prs.	3	24	..
4 others	Do...	Bldg.	..	..	..	..	..	..	..	..	..	..	..

All the Poplar destroyers have Yarrow water-tube boilers, and the later ones are fitted for the consumption of oil fuel.
One submarine boat (Holland type) to be purchased.

Norway.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
Destroyers—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Valkyrien	Elbing	1896	190	24·3	9·3	1	374	3,300	23·2	2 12-pdrs. 4 1-pdrs.	2	59	90
X	..	Bldg.	226	25·0	..	..	550	7,500	27·0	6 12-pdrs.	2	71	95
First Class—													
Varg (8), Raket (9)	Christiania	1894	111·5	12·4	..	1	43	..	..	..	2	..	..
Hval, Delfin, Hai (3 boats)	Elbing	1896	128·0	15·0	6·9	1	84	1,100	24·5	2 1·4-in.Q.F.	2	..	..
Storm, Brand, Trods	Christiania	1899	128·0	15·0	..	1	84	1,100	23	2 1·4-in. Q.F.	2		
Laks, Sild, Sael, Skrei	Christiana	1900	128·0	15·0	6·9	1	84	11,000	23	2 1·4-in.	2	..	..
Kjeck, Hvas, Dristig, Kvik, Djerv, Blink, Glint, Hauk, Falk	Christiana	1898 1903	111·5	14·5	6·3	1	65	650	19	2 1·4-in.	2	..	..
Skarv, Teist, Lom, Jo, Grib	Christiana	1906–7	134·5	14·9	..	1	100	1,700	25·0	2 3-pr.	..	..	..
Ravn, Orn	Christiana	1903	119	14·9	6·4	1	73	1,035	22·5	2 1·4-in.	2	14	13

A submarine boat to be purchased abroad.

Portugal.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
5 boats (5–9)	Elbing	1890–92											
Mineiro	Lisbon	1893	..	..	..	..	..	..	12				
Submarine—													
Plongeur	Lisbon	1892	72·1	11·5	..	..	100	..	6		4	6	

Roumania.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
First Class—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Naluka	Havre	1888	120·7	11·3	6·9	1	56	578	21	1 1-pr. rev.	2	..	12
Sborul	Havre	1888	120·7	11·3	6·9	1	56	578	21	1 1-pr. rev.	2	..	12
Smeul	Havre	1888	120·7	11·3	6·9	1	56	578	21	1 1-pr. rev.	2	..	12
Second Class—													
Soimul	Yarrow ..	1882	63	8	3	1	12	150	16·5	..	..	8	
Vulturul	Yarrow ..	1882	63	8	3	1	12	150	16·5	..	..	8	

4 100 ft. Torpedo Vedette Boats built by the Thames Ironworks, and 4 others to be delivered in 1907.

Russia.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
BALTIC SEA.													
Destroyers—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Kondratenko, Okhotnik, Pogranitschnik, Siberskij-Strelok ..	Abo and Helsingfors	1905	250·3	27·0	8·9	2	625	7,300	25–26	2 12-pdrs. 6 6-pdrs.	3	100	191
Amuretz, Gaidamak, Ussuritz, Vsadnik ..	Kiel (Germania)	1905 1906	232·9	23·7	7·9	2	560	6,500	25–26	2 12-prs. 6 6-prs.	3	98	180
Emir Bukharsky, Dobrovoletz Finn, Moskvityanin	Helsingfors	1905	238	27·0	8·6	2	580	6,500	25–26	2 12-pdrs. 6 6-pdrs.	3	98	134
Donskoi – Kasak, Kasanetz, Sabaikaletz, Steregushtshi, Strashny, Trukhmenetz, Ukraina, Voiskovoi	Riga	1904 1906	239·9	23·7	7·6	2	508	6,200 7,020	25–27	2 12-pdrs. 4 6-pdrs.	2	90	50 120
Prytki	Poplar	1895	190	18·6	7·0	2	240	4,400	29.7	1 12-pr, 3 3-pr	2		
Revy, Retivy, Ryany, Rezviyi, Prosorlivy, Pilky, Ridny, Posluchny, Protchny, Poraiaiuchtchi, Prontsiteliny, Podvitsny	Abo, Ishora & Nevsky ..	1898	196·9	18·4	11·5	1	240	3,800	27	1 12-pr, 3 3-pr	2	55	53
Bravi, Vidny, Bodry	Nevsky and Ishora ..	1900–2	196·9	18·4	11·5	1	350	6,000	27	1 12-pr, 5 3-pr	3		
Grozni, Grosiashtchi	St. Petersburg	1904	196·9	18·4	11·5	1	350	6,000	27	1 12-pr, 5 3-pr	3		
Tverdy, Totschny, Trevoshny	Abo	1905	196·9	18·4	11·5	1	240	6,000	27	1 12-pr, 5 3-pr	3		
Iskousny, Ispolnitelni, Kriepky, Legky	La Seyne ..	1905	185·9	21·0	7·5	2	324	5,600	26	1 12-pr, 5 3-pr 2 M	2	60	30 100
Lovki, Letutshi, Lichoi	Havre (Normand)	1905	185·8	21·0	7·5	2	324	5,600	27·5	1 12-pr, 5 3-pr 2 M	2	60	30 100
Boievoi, Bditelny, Burni, Vnimatelni, Vnushitelni, Vynoslivny, Sergieff, Yurasofsky, Sviereff, Dmitrieff	Elbing Schichau	1905–6					365						
Silni, Storoshevoi, Stroiny, Rasyashtshy, Rastoropny, Burakoff, Dyelni, Dostoiny, Deyatelni, Myetky, Molodetsky, Moshtshny, Malieieff, Anastosoff	St. Petersburg and Ochta	1905 & Bldg.	185·9	21·0	7·5	2	335-56	5,600	26	1 12-pr, 5 3-pr 2 M	2	60	30 100
First Class—													
Aspen	Ishora	1895	127·9	15·7	6·9	1	98	1,250	21	..	2	..	17
Domeness	Putiloff ..	1895	127·9	15·7	6·9	1	98	1,250	21	..	2	..	17
Hogland	Ishora	1894	128	16	6·9	1	85	1,200	22	2 1-prs.	2	13	17
Nargen	Ishora	1894	128	16	6·9	1	85	1,200	22	2 1-prs.	2	13	17
Rochensalm	Putiloff ..	1890	136·5	13	7·8	..	81	1,100	21				
Sestoretsk	Normand ..	1894	118	13·2	8·6	1	80	1,300	24	2 1-prs.	2	21	10
Transund	Ishora	1895	127·9	15·7	6·9	1	98	1,250	21	..	2	..	17
2 boats	St. Petersburg	1896	128	16	6·9	2	85	1,200	22	2 1-prs.	2	13	17
6 boats	St. Petersburg	1897	138	14·7	9·9	2	120	..	25	..	2	26	
8 boats	Nevsky ..	1898	..	..	..	..	118						

19 other boats, built in 1890–95.

Russia—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
BLACK SEA.			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Baranoff, Shestakoff, Pustchin, Sazarenny	Nicolaieff ..	Bldg.	241·6	27·0	7·9	2	614	6,500	25	6 12-pdrs.	3	90	200
Zavidni, Zavetni, Zharki, Zhutki, Zhivoi, Zhivulka, Zhivutshtshy ..	Nicolaieff ..	1903-4	210	21·2	7	2	350	5,500	27	1 12-pr,5 3-pr	2		
Stremitelini, Strogi, Smetlivy, Svirepy†	Abo	1901	190·4	18·5	11·5	2	240	3,800	27	1 12-pr,3 3-pr	2	..	60
Zadorni, Zorki, Zvonki	Nicolaieff ..	1903	210	21·2	7	2	350	5,500	27	1 12-pr,5 3-pr	2		
FIRST CLASS—													
A. B. C. (3 boats) ..	Nicolaieff ..	1893	126	..	..	..	81	..	21				
Adler..	Elbing ..	1890	152·0	17·2	7·9	2	130	2,200	27·4	2 1 prs.	3	24	40
Anakria	Elbing ..	1890	128·0	16	6·9	1	85	1,200	22	2 1-prs.	2	13	17
Anapa	Odessa.. .	1891	126	13	8·5	1	81	1,100	21	2 1-pr. revs.	2	13	
Aitodorj	Odessa.. ..	1891	126	13	8·5	1	81	1,100	21	2 1-pr. revs.	2	13	
D. E. (2 boats) ..	Sebastopol ..	1893	128	..	..	..	85	..	22				
FAR EAST.													
DESTROYERS—													
Bespochtchadni, Bestrachni, Beschumni (3 boats)	Elbing ..	1899	196·9	18·4	11·5	1	350	6,000	27	1 12-pr,5 3-pr	2		
Grozovoi, Vlastni ..	Havre(F.&C.)	1900–2	186·0	20·8	10·3	2	300	5,000	28	1 12-pr.5 3-pr	2	..	80
Boiki	Nevsky ..	1900	196·9	18·4	11·5	1	350	6,000	28	1 12-pr,5 3-pr			

† These destroyers proceeded from Cronstadt to Sebastopol, unarmed, January, 1903, passing the Dardanelles by consent of the Porte.

A small submarine boat from the plans of Lieut. Kolbasieff and Engineer Kuteinikoff received the name of Matros Piotr Koschka. Bubnoff's submarine, the *Delfin* (77 ft., 175 tons), made a successful run of 36 hours from Kronstadt to Bjoerkoe, 26 hours submerged. There are two submersibles, 80 ft. long, designed by Drzewiecki. Graf Sheremeteff completed at St. Petersburg, Russia has 13 submarines built and 15 building.

Spain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Terror .. .. .. Audaz	Clydebank ..	1896	220	23	5·6	2	300	6,000	28	2 12-pr. 2 6-pr. 21-pr.	2	67	100
Osado .. .. .. Proserpina	Clydebank ..	1897	225	25·6	5·8	2	400	7,500	30	2 14-pr. 2 6-pr. 21-pr.	2	70	90
FIRST CLASS—													
Acevedo	Chiswick ..	1885	117·7	12·5	6·2	1	63	660	20·1	2 mach.	2		
Azor	Poplar.. ..	1887	134·5	14	6	1	108	1,600	24	4 3-pr. Q.F.	3	23	25
Bustamente	Normand ..	1887	126	10·9	..	..	63	800	..	3 3-prs.	2		
Habana	Chiswick ..	1887	127·5	12·5	6	1	59	730	21·3	1 mach.	2		
Halcón	Poplar	1887	134·5	14	..	1	108	1,600	24	4 3-pr. Q.F.	3	23	25
Julian Ordoñez ..	Chiswick ..	1885	117·7	12·5	6·2	1	65	660	20·1	2 1-in. Nord.	2		
Orion..	Gaarden ..	1885	125–	15·5	3·5	1	85	1,000	21·5	2 1-pr. revs.	2	18	16
Barcelo	..	1886	117·7	12·5	6·2	1	63	660	20	2 mach.	2		
VEDETTE BOATS—													
3 boats	East Cowes	1892	60	9·3	..	..	..	..	18·3				
SUBMARINE—													
Peral..	Carraca ..	1889	70	8·5	..	2	87	60	10				

Azor, Halcón and Orion being re-boilered by Yarrow (W.-tube).

Sweden.

Torpedo Boats.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
DESTROYER—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Mode	Yarrow	1902	220·3	20 6	8·9	2	400	6,800	32·4	1 12-pr. 5 6-prs.	2	55	95
Magne Wale	Thornycroft Malmo	1905 1906	216·7	20·0	7·2	2	350	7,400	30·5	1 12-pr. 5 6-prs.	2	59	96
Ragnar Sigurd	Malmo Gothenburg	Bldg. Bldg.	216·9	20·8	8·2	2	430	7,200	30·0	2 12-prs. 4 6-prs.	2	..	..
FIRST CLASS—													
Komet	Elbing	1896	128	15·9	6·11	1	92	1,056	23·0	2 1·9-in. Q.F.	2	16	17
Blixt	Carlskrona	1898	128	15·9	6·11	1	92	1,260	23·5	2 1·9-in. Q.F.	2	18	17
Meteor	Carlskrona	1899	128	15·9	6·11	1	92	1,330	23·8	2 1·9-in. Q.F.	2	18	17
Stjerna	Carlskrona	1899	128	15·9	6·11	1	92	1,250	23·4	2 1·9-in. Q.F.	2	18	17
Orkan	Carlskrona	1900	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q.F.	2	18	17
Vind	Carlskrona	1900	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q.F.	2	18	17
Bris	Carlskrona	1900	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q.F.	2	18	17
Virgo	Carlskrona	1902	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q F.	2	18	17
Mira	Carlskrona	1902	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q.F.	2	18	17
Orion Sirius Kapella	Carlskrona	1903	128	15·9	6·11	1	92	1,250	23·5	2 1·5-in. Q.F.	2	18	17
Pleiad	Normand	1905	125	15	6·6	1	96	1,900	26	2 1·5-in. Q.F.	2	18	—
Vega Vesta	Carlskrona	Bldg.	125	17·5	8·6	1	105	1,900	25·5	1 6-pr. 1 1·4-in.	2	..	..
Spica, Astrea, Iris, Thetis	Bergsund and Gothenburg	Bldg.	125	17·5	8·6	1	105	1,900	25·5	1 6-pr. 1 1·4-in.	2	..	..
2 boats (9 and 11)	Carlskrona	1894	126·8	13·11	7·7	1	86	850	19·5	2 mach.	2	16	15
SECOND CLASS—													
No. 75	Stockholm	1892	100·5	11·6	6·3	1	49	460	18·9	1 mach.	2	14	9
No. 77	Carlskrona	1891	100·5	11·6	6·3	1	49	460	18·9	1 mach.	2	14	9
No. 79	Stockholm	1902	104·0	12·5	6·1	1	49			1 1·5-in. Q.F.	2	14	
No. 81	Stockholm	1902	104·0	12·5	6·1	1	49			1 1·5-in. Q.F.	2	14	
No. 83	Stockholm	1903	104·0	12·5	6·1	1	49			1 1 5-in. Q.F.	2	14	
No. 85	Stockholm	1903	104·0	12·5	6·1	1	49			1 1·5-in. Q.F.	2	14	
THIRD CLASS—													
Nos. 141, 143, 145, 147, 149 (5 boats)	Stockholm	1879 1890	55·0	10·7	4·1	2	21	80	10	..	2	..	1·5
SUBMARINE—													
Enroth	Stockholm	1902	82·0	13·0	11·6	2	146	100	12–11	..	1	..	..
Hajen	Stockholm	1903	65·0	11·6	..	..	120	200	10–7	..	..	..	..

Provision is made for two destroyers and six torpedo boats in 1907–8.

Turkey.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Coal Capacity.
			Length.	Beam.	Draught.								
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
Berk-Efshan	Gaarden	1894	187	21·6	..	2	270	1,200	25	6 1-pr. revs.	2		
Tajjar	Gaarden	1894	187	21.6	..	2	270	..	25	6 1-pr. revs.	2		
Samsoun Basra 2 others	Bordeaux	Bldg.	184·9	19·6	9·6	2	280	..	28	1 9-pr. 6 3-pr.	2	..	26
FIRST CLASS—													
Eliagot, Ac-Hisar	Sestri Ponente	1904	165·8	18·6	4·5	..	165	2,200	27				
Angora, Urffa, Antalia, Tokat, Deradj, Kulahia, Mossul	Sestri Ponente	1906	165·8	18·6	4·5	..	165	2,200	24				
A. B.	Sestri Ponente	1901	166	18·6	4·0	2	145	2,400	26	2·1 pr.	2	..	16
Edjder (No. 10)	Gaarden	1890	152·7	18·9	7·4	2	150	2,200	23	5 3-prs. Q.F.	2		
5 boats	Gaarden	1889–90	126·7	15·4	8·6	1	85	1,300	22	2 1-pr. revs.	2	21	8
2 boats	Kiel	1892	127	..	..	..	..	..	22				

Four torpedo boats have been ordered in France.

United States.

Name.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Indicated Horse-Power.	Maximum Trial Speed.	Armament.		Complement.	Maximum Coal Capacity.
			Length.	Beam.	Draught.					Guns.	Torpedo Tubes.		
			ft. in.	ft. in.	ft. in.		Tons.		Knots.				Tons.
Destroyers—													
Bainbridge ..	Philadelphia	1901	245 0	23 7	6 6	2	420	8,000	29	2 12-pr., 5 6-pr.*	2	64	139
Barry	Philadelphia	1902	245 0	23 7	6 6	2	420	8,000	29	2 12-pr., 5 6-pr.	2	64	139
Chauncey.. ..	Philadelphia	1901	245 0	23 7	6 6	2	420	8,000	29	2 12-pr., 5 6-pr.	2	64	139
Dale	Richmond ..	1900	245 0	23 7	6 6	2	420	8,000	28	2 12-pr., 5 6-pr.	2	64	139
Decatur	Richmond ..	1900	245 0	23 7	6 6	2	420	8,000	28	2 12-pr., 5 6-pr.	2	64	139
Hopkins	Wilmington	1902	244 0	24 6	6 0	2	408	7,200	29	2 12-pr., 5 6-pr.	2	64	150
Hull	Wilmington	1902	244 0	24 6	6 0	2	408	7,200	29	2 12-pr., 5 6-pr.	2	64	150
Lawrence.. ..	Quincy, Mass.	1900	242 3	22 3	6 2	2	400	8,400	30	2 12-pr., 5 6-pr.	2	64	115
Macdonough ..	Quincy, Mass.	1901	242 3	22 3	6 2	2	400	8,400	30	2 12-pr., 5 6-pr.	2	64	115
Paul Jones ..	San Francisco	1900	245 0	23 7	6 6	2	420	7,000	29	2 12-pr., 5 6-pr.	2	64	139
Perry	San Francisco	1900	245 0	23 7	6 6	2	420	7,000	29	2 12-pr., 5 6-pr.	2	64	139
Preble	San Francisco	1901	245 0	23 7	6 6	2	420	7,000	29	2 12-pr., 5 6-pr.	2	64	139
Stewart	Morris Heights	1902	245 0	23 7	6 6	2	420	7,000	29·3	2 12-pr., 5 6-pr.	2	64	139
Truxtun	Baltimore ..	1901	248 0	23 3	6 0	2	433	8,300	30	2 12-pr., 5 6-pr.	2	64	232
Whipple	Baltimore ..	1901	248 0	23 3	6 0	2	433	8,300	30	2 12-pr., 5 6-pr.	2	64	232
Worden	Baltimore ..	1901	248 0	23 3	6 0	2	433	8,300	30	2 12-pr., 5 6-pr.	2	64	232
Bagley	Bath	1900	157 0	17 0	4 7	2	167	3,920	28	3 3-pr.	3	29	..
Bailey	Morris Heights	1899	205 0	19 0	6 0	2	235	5,000	30	4 6-pr.	2	..	20
Barney	Bath	1900	157 0	17 0	4 7	2	167	3,920	28	3 3-pr.	3	29	..
Biddle	Bath	1900	157 0	17 0	4 7	2	167	3,910	28	3 3-pr.	3	29	..
Blakely	Boston ..	1902	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
De Long	Boston ..	1901	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
Du Pont	Bristol, R.I.	1897	175 0	17 8	4 8	2	165	3,400	28·58	4 1-pr.	3	32	76
Farragut	San Francisco	1898	213 6	20 8	6 0	2	273	5,600	30	4 6-pr.	2	..	76
Foote..	Baltimore ..	1896	160 0	16 1	5 0	2	142	2,000	24·5	3 1-pr.	3	24	44
Goldsborough ..	Portland, Ore.	1902	194 8	20 5	5 0	2	247·5	5,880	30	4 6-pr.	2	..	131
Nicholson ..	Elizabethport	1902	174 6	17 0	4 6	2	174	3,500	26	3 3-pr.	3	29	..
O'Brien	Elizabethport	1902	174 6	17 0	4 6	2	174	3,500	26	3 3-pr.	3	29	..
Porter	Bristol, R.I.	1896	175 0	17 8	4 8	2	165	3,800	28·63	4 1-pr.	3	32	76
Rodgers	Baltimore ..	1896	160 0	16 1	5 0	2	142	2,000	24·5	3 1-pr.	3	24	44
Rowan	Seattle, Wash.	1898	170 0	17 0	5 11	2	182	3,200	26	4 1-pr.	3	32	60
Shubrick	Richmond ..	1899	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
Stockton	Richmond ..	1899	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
Stringham ..	Wilmington	1899	225 0	22 0	6 6	2	340	7,200	30	7 6-pr.	2	..	120
Thornton	Richmond	1900	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
Tingey	Baltimore ..	1902	175 0	17 6	4 8	2	165	3,000	26	3 3-pr.	3	29	70
Wilkes	Morris Heights	1901	175 0	17 6	4 8	2	165	3,000	26·25	3 3-pr.	3	29	70
Winslow	Baltimore ..	1897	160 0	16 1	5 0	2	142	2,000	24·5	3 1-pr.	3	24	44
Sea-Going—													
Cushing	Bristol, R.I.	1890	138 9	14 3	4 11	2	105	1,720	22·5	3 1-pr.	3	23	36
Davis	Portland, Ore.	1898	146 0	15 4	5 4	2	132	1,750	22·5	3 1-pr.	3	..	..
Dahlgren	Bath	1899	147 0	16 4	4 7	2	146	4,200	30·5	4 1-pr.	2	..	32
Ericsson	Dubuque, Iowa	1894	149 7	15 6	4 9	2	120	1,800	24	4 1-pr.	3	23	35
Fox	Portland, Ore.	1898	146 0	15 4	5 4	2	132	1,750	22·5	3 1-pr.	3	..	..
Morris	Bristol, R.I.	1898	138 3	15 6	4 1	2	105	1,750	24	3 1-pr.	3	..	28
Somers	Schichau, Elbing ..	1898	149 3½	17 5	..	2	145	..	..	..	..	..	..
T. A. M. Craven	Bath	1899	147 0	16 4	4 7	2	146	4,200	30·5	4 1-pr.	2	..	32
Third Class—													
Gwin..	Bristol, R.I.	1897	99 6	12 6	3 3	1	46	850	20·88	1 1-pr.	2	..	8
Mackenzie ..	Philadelphia	1898	99 3	12 9	4 3	1	65	850	20	1 1-pr.	2	..	15·3
McKee	Philadelphia	1898	99 3	12 9	4 3	1	65	850	19·82	2 1-pr.	2	..	..
Talbot	Bristol, R.I.	1897	99 6	12 6	3 3	1	46	850	21·15	1 1-pr.	2	..	8·8
Submarine—													
Adder	Elizabethport	1901	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Grampus ..	S. Francisco	1902	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Holland	Elizabethport	1896	54 0	10 3	..	1	74	150	8	1 dynamite	1	5	..
Moccassin ..	Elizabethport	1901	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Pike	S. Francisco	1902	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Plunger	Elizabethport	1902	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Porpoise	Elizabethport	1901	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Shark	Elizabethport	1901	63 4	11 9	..	1	120	160	7—8	..	1	..	..
Cuttlefish.. ..	Quincy, Mass.	1906	80 6	..	..	..	170						
Viper	Quincy, Mass.	Bldg.											
Tarantula.. ..	Quincy, Mass.												
Octopus	Quincy, Mass.	1906	106 0	..	..	..	273						

* Guns of destroyers of this class are Driggs Semi-Automatic Quick-Firers.

With the exception of the Lawrence, Macdonough, and Stewart, all the destroyers in the first alphabetical list have Thornycroft water-tube boilers. The Farragut, Goldsborough and Stringham have also boilers of this type.

The submarine Fulton, of the Holland type, built experimentally by the Holland Company, was launched June, 1901. Three other submarines are to be built.

BRITISH AND FOREIGN ORDNANCE TABLES.

U

BRITISH RIFLED ORDNANCE.

Ordnance.										Charge. (full).	Charge (cordite).		Projectile.						Ballistics (with full charges).					
Nature.			Total length in inches.	Length of Bore, including Chamber.	Chamber.		Rifling.			Weight.	Weight.	Size.	Diameter.	Weight.	Bursting Charge of Common Shell.	Value of $\frac{d^3}{w}$.	Value of $\frac{w}{d^3}$.	Muzzle velocity.	Total muzzle energy.	Muzzle energy per ton of gun.	Perforation of wrought iron.			
Calibre or Pr.	Weight.	Mark and Service.			Diameter.	Length to base of projectile.	Twist one turn in Least at breech.	Twist one turn in Greatest at muzzle.	System.*												At muzzle.	At 1000 yards range.	At 2000 yards range.	At 3000 yards range.
				cals.	ins.	ins.	cals.	cals.		lbs.	lbs. ozs.		ins.	lbs.	lbs.			f. s.	ft. tons.	ft.tons.	ins.	ins.	ins.	ins.
QUICK-FIRING GUNS (using metal cases)																								
6·0 in.	7 tons	I. & III. II. (Wire)	249·25	40	..	..	60	30	P.	..	13 4	30	6·0	100·0	..	0·360	0·463	2200	3356	479	15·9	12·7	10·2	8·2
6·0 in. Q.F.C.	5 „	I. to VI.	169·1 166·6	26·2 26·6	.. ..	.. ..	.. ..	.. ..										1913	2537	362	13·0	10·3	8·2	6 4
4·7 in.	41 cwt. 42 „	I. II. III. & IV. Wire	194·1	40	..	..	100 0	34·4 30	E.O.C.	..	5 7	20	4·72	45·0	..	0·495	0·428	2188	1494	711	12·4	9·2	6·6	5·0
4 in.	26 cwt.	I. II. III. Wire converted guns	165·25 120	40 28	..	..	..	30	M.Pl.	..	3 9	15	..	25·0	..	0·640	0·390	2300 2177	917 821	705 569	10·5 9·5	6·9 6·5	4·9 4·6	3·3 3·0
12-pr.	12 cwt.	I.	123·6	40	..	..	120 0	28 30	E.O.C. M.Pl.	..	1 15	10	3·0	12·5	..	0·667	0·500	2210	423	677	8·1	5·3	3·5	2·4
12-pr.	8 cwt.	I.	87·6	28	..	..	60 0	28 30	E.O.C. M.Pl.	..	13¾	10	3·0	12·5	..	0·667	0·500	1607	223·8	544	4·9	3·2	2·4	..
Hotchkiss . 6-pr...	8 cwt.	I. & II.	97·63	40·0	..	..	180	29·9	M.Pl.	..	[b]7¾	5	2·24	6·0	.	0·836	0·534	1818	137·5	344·8	4·8	2 3	..	..
Nordenfelt . 6-pr...	6 cwt.	I. II. & III.	104·4	42·3	..	..																		
Hotchkiss . 3-pr ..	5 cwt.	I. & II.	80·63	40	..	..	25	25	M.Pl.	..	[b]6⅜	5	1·85	3·3	..	1·037	0·521	1873	80·3	321·2	4·1	2·1	..	..
Nordenfelt . 3-pr...	4 cwt.	I. L.	91·5	45·4									..	..	..	..	..	1920	84·3	337·2	4·3	2·2	..	..
MACHINE GUNS.																								
Maxim, 1 bar 0·45 in.	63 lbs.	I.	45·0	..	..	..	10	27	Enfi'ld	grains. 31 Cordite	..	..	0·450	grs. 480	..	2·952	0·751	..	..	..	Same as M.H. Rifle.			
Maxim, ·303			42·38				10	25·6	Metf'd				0·303	215	..	..	..	..	..	..	Same as Lee-Metford.			

---

* P. means Polygroove; M.Pl., Modified plain.

[b] With 4 grs. R.F.G.

Note.—An armour-piercing shell has now come in for the 6-in. guns.

BRITISH RIFLED ORDNANCE—*continued.*

Ordnance.										Charge (cordite).		Projectile.						Ballistics (with full charges).					
Nature.			Total length in inches.	Length of Bore, including Chamber.	Chamber.		Rifling.		System.†	Weight.	Size.	Diameter.	Weight.	Bursting Charge of Common Shell.	Value of $\frac{d^2}{w}$.	Value of $\frac{w}{d^3}$.	Muzzle velocity.	Total muzzle energy.	Perforation of wrought iron.				Perforation Krupp steel, 3000 yards. Uncapped Shot.
							Twist one turn in.																
Calibre or Pr.	Weight.	Mark and Service.*			Diameter (at largest).	Length to base of projectile.	Least at breech.	Greatest at muzzle.											At muzzle.	At 1000 yards range.	At 2000 yards range	At 3000 yards.	
B.L. GUNS.				cals.	ins.	ins.	cals.	cals.		lbs. oz.		ins.	lbs.	lbs. oz.			f. s.	ft. tons.	ins.	ins.	ins.	ins.	ins.
16·25-in.	110½ tons.	III.	524·0	30·0	21·125	84·5	newer patterns.	30	Modified Pl. Section, the last in the new guns.	960‡ S.B.C.	..	16·25	1800	‡‡193 **179¼	0·147	0·420	2087	54,390	38·0	34·6	31·7	29·4	13
13·5-in.	69 & 67 tons.	I. II. III.& IV.	433·0	30·0	18·0	66·5		30		187 8	..	13·5	1250	**85	0·146	0·508	2016	35,230	33·0	30·2	27·6	25·2	11
12-in.	46 tons.	VIII. Wire	445·5	35·43	16·0	70·0		30		167 8	50	12·0	850	80–1$\frac{9}{11}$	0·169	0·492	2367	33,020	37·0	32·7	29·4	26·6	11½
12-in.	50 tons.	IX. Wire	496·5	40·0	17·5	87·2		..		201 8 9 8	50 3¾	12·0	850	„	..	..	2481 §2580	36,290 39,280	39·7 42·0	35·4 38·0	31·6 34·6	28·7 32·0	12½ 14
12-in.	58 tons.	X. Wire	558·0	45·0	..	..		..		325 0 M.D.	..	12·0	850	..	..	..	2900	47,697	51·0	46·2	42·0	38·4	17
10-in.	31 tons.	Triumph & Swiftsure	483·0	45·0	14·0	64·5		..		..	..	10·0	500	..	..	..	§2800	§27,205	39·5	34·6	30·2	27·0	11¾
10-in.	29 tons.	II. III. III.^{A} & IV.	342·4	32·0	14·0	54·0		30		76 0	30	10·0	500	37¾	0·200	0·500	2040	14,430	24·8	21·8	19·3	17·0	7½
9·2-in.	21 & 22 tons.	I. & II.	255·8	25·56	11·0	44·0		35		42 0	30	9·2	380	18 ‡‡33 **30$\frac{6}{16}$	0·223	0·488	1781	8,356	18·3	15·9	14·4	12·4	5½
9·2-in.	24 & 22 tons.	III. V. VI. VI.$_{A\&O}$ & VII.	310·0	31·5	12·0	43·0		30		53 8	30	9·2	380		0·223	0·488	2065	10,910	22·9	19·8	17·2	15·5	6¾
9·2-in.	25 tons.	Wire VIII.	384·0	40·08	10·5	53·15		..		63 0	40	9·2	380	..	0·223	0·488	2347	14,520	27·6	23·9	20·7	18·0	7¾

9·2-in ††	28 tons.	Wire X.	442·35	46 6	13·0	71·215	Various in the	..	P. Elswick, Hook, or	103	0	44	9·2	380	..	0·223	0·488	2640 §2800	18,400 20,685	33·3 36·0	28·9 31·2	25·0 27·4	22·0 24·0	9½ 10½
7·5-in.	16 tons.	Triumph & Swiftsure	386·7	50·0	..	46		..		..		..	..	200	..	0·281	0·474	§2800	10,883	29·0	24·9	21·4	17·8	7¾
7·5-in.	14 tons.	..	337·5	45	11·1	55		30		47 2	0 8	30 2½	7·5	200	18½	0·281	0·474	2600	9,340	26·0	22·3	18·8	15·7	6¾
6-in.	5 tons.	III.	170·7	25·53	8·0	26·75		35		14	12	20	6·0	100	7 4/16 **9 13/16	0·360	0·463	1960	2,665	13·4	10·7	8·9	7·0	3
6 in.	5 tons.	IV. VI.	173·5	26·0	8·0	26·75		35 30					6 0											
6-in.	7·4 tons.	VII. VIII.	269·5	45	8·5	32·7		30		20	0	20	6·0	100	9	0·360	0·463	2493 §2750	4,308 5,250	19·6 22·3	15·3 18·0	11·9 14·6	9·8 11·6	4¼ 5
4-in.	23 cwt. 26 cwt.	II.II$_B$.III.III$_A$ IV.V.& VI.	120·0	27·0	5·3	18·5	120	30		3	1	5	4·0	25	1 12/16 3 3/16	0·640	0·391	1900	625	7·7	5·4	4·0	3·0	..

---

* The Roman numeral is the number of the pattern given. Further differences in pattern are indicated by letters a, b, and c. Some details of the 12-in. Mark X. uncertain.

† P. means Polygroove; Pl., Plain; ‡ Cordite has not been introduced for this gun; § Estimated with M.D. cordite; ** Cast steel; †† A 50-calibre 9·2-in. gun is under construction; ‡‡ Forged steel.

AUSTRIAN NAVAL ORDNANCE.

Designation by Calibre, in centimètres, length in calibres, and type of gun		30 5 L. 35 K. 80	24 L. 40 K. 01	24 L. 40 K. 94	24 L. 35 K. 86	19 L. 42 Skoda.	15 L. 40 Skoda.	15 L. 35 K. 86	15 L. 35 K. 80	12 L. 40 Skoda.	12 L. 35 K. 80	12 L. 35 K. 87
Calibre, in inches		12·01	9·45	9·45	9·45	7·5	5·91	5·87	5·87	4·72	4·72	4·72
Length	Total, in feet	35·11	31·6	31·4	27·60	26·3	19·5	17·13	17·13	15·74	13·8	13·8
	Rifled Portion, in ins.	314·8	291·3	286·2	237·7	239·7	182·6	151·4	153·6	147·6	128·5	126·3
	Powder Chamber in ins.	69·9	59·0	63·7	65·2	51·8	35·4	37·3	35·4	28·3	24·0	26·3
	Of bore in calibres	35	40	40	35	42	40	35	35	40	35	35
No. of Grooves		68	72	72	25	56	44	36	36	36	32	36
Twist in calibres		45–25	..	..	26·9	..	..	45–25	25	25	25	25
Weight	Gun, tons	47·2	21·5	27·8	26·6	11·6	5·18	5·7	4·69	1·97	2·25	2·31
	Breech Block, in lbs.	3306·9	..	..	1776·9	..	..	445·3	463·0	..	253·5	211·6
	Steel Shell ,,	1003·1	474	474	474·0	198	112·5	112·5	86·0	52·4	57·3	57·3
	Common Shell ,,	1003·1	474	474	474·0	..	112·5	112·5	69·9	52·4	57·3	57·3
	Shrapnel Shell ,,	..	..	..	..	..	..	112·4	71·9	..	57·3	57·3
Weight of Bursting Charge	Case Shot ,,	..	..	..	..	..	..	..	..	..	..	..
	Steel Shell ,,	10·6	..	..	5·1	..	..	1·3	1·76	..	0·55	0·55
	Common Shell ,,	97·7	..	..	17·9	..	..	5·29	3·86	..	2·2	2·2
	Shrapnel Shell ,,	..	..	..	..	..	..	1·26	1·10	..	0·57	0·57
Weight of Firing Charge	Steel Projectile, in lbs.	156·5 24 cm. N	120·6	91·5	99·2N	56 N	28·8	22·5 15 cm. N	38·8*	9·7	19·8 B	12·13N
	Common Shell, in lbs.	156·5 N 24 cm. N		91·5	99·2N			22·5 15 cm. N	38·8*		19·8 B	12·13N
	Shrapnel, in lbs.	..	..	..	..	..	..	..	..	..	..	..
	Exercising, in lbs.	154·3B	..	..	..	..	..	28·7	19·6	..	11·0	6·6 N
	Saluting ,,	19·8 O	..	..	15·4 O	..	..	4·74	4·74 O	..	2·4 O	2·4 O
Muzzle Velocity, in feet		1969	2595	2264	2100	2700	2608	2133	1969	2264	1755	2133
Muzzle Energy	Total, foot-tons	26,970	22,121	16,845	14,500	10,025	5308	3549	2312	3554	1215	1808
	Per inch circumference, foot-tons	714·8	..	..	488·3	..	..	192·5	125·4	..	82·5	122·2
Thickness of Iron, perforated inches at Muzzle, by Tresidder's formula		30·1	34·5	29·0	25·8	27·3	22·0	16·1	12·6	13·7	9·7	12·9
Perforation of Krupp Steel, 3000 yds., inches		10	9½	8	7	6¾	5	3½	..	..	..	..

NOTE.—C for cube powder; * prismatic powder: O, ordinary powder; B, brown prismatic. N, nitro-glycerine smokeless powder.
There are other types of Krupp guns, also Skoda 7-cm., Skoda and Hotchkiss 47-mm., and Hotchkiss 37-mm.

DANISH NAVAL ORDNANCE.

		Krupp B.L. Guns designated.													
Designation by Calibre		35·5 cm.	30·5 cm.	26 cm. long.	26 cm. short.	24 cm.	24 cm.	21 cm.	15 cm.	15 cm. long.	15 cm. medium.	15 cm. short.	12 cm. long.	12 cm.	8·7 cm.
Calibre, in inches		13·98	12·01	10·24	10·24	9·4	9·4	8·24	5·9	5·91	5·91	5·91	4·72	4·72	3·43
Total length, in feet		29·1	22·0	32·8	18·77	31·4	31·6	24·04	..	17·1	12·63	10·7	11·8	..	11·5
Length of Bore, including Powder Chamber	in inches	304·7	227·2	327·6	194·5	..	..	264·5	..	190·3	135·0	112·9	128·8	..	..
	in calibres	21·8	18·9	32·0	19·0	37	37·5	35	40	32·2	22·8	19·1	27·3	37·5	37·1
Number of Grooves		80	68	60	60	..	..	48	..	36	36	36	32	..	..
Twist of Rifling, in calibres		45	45	70–25	45	..	..	70–25	..	70–25	45	45	25	..	..
Total weight, including Breech-gear, tons		51·3	35·4	27·6	21·6	25·4	22·9	13·3	..	4·7	4·4	3·5	2·13	..	..
Weight of	Breech Block, lbs.	4695·8	2910	2006	1940	..	..	903·9	..	390·2	330·7	324·1	229·2	..	..
	Steel Shell, „	1157·4	725·3	451·9	451·9	353	353	238·1	112	112·4	..	86·0	..	44	..
	Chilled Shell, „	1157·4	725·3	..	451·9	..	..	..	..	..	86·0	86·0	..	..	..
	Common Shell, „	1157·4	725·3	451·9	451·9	230	353	238·1	112	112·4	69·4	69·4	57·3	44	20
	Shrapnel Shell, „	1157·4	725·3	451·9	451·9	..	..	238·1	..	112·4	86·0	86·0	57·3	..	..
	Case Shot, „	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Weight of Bursting Charge	Common Shell, „	57·3	39·7	25·4	25·4	16·5	16·5	12·8	6·2	6·2	3·0	3·0	1·7	..	..
Weight of Firing Charge	Steel or Chilled Shell, lbs.	330·7	180·2	191·8	101·4	..	75*	105·8	20·9*	41·9	19·3	21·8	17·4	9·7*	3·59*
	Common Shell, „	330·7	180·2	191·8	112·4	..	75*	105·8	..	41·9	19·3	21·8	17·4	..	..
Muzzle Velocity	Armour-piercing Projectile, feet	1762	1675	2018	1640	2159	2362	2021	2264	1800	1565	1542	..	2460	2379
	Common Shell, „	1762	1675	2018	1640	..	..	2021	..	1890	1683	1690	1720	..	..
Muzzle Energy	Total foot-tons	24910	14110	12770	8428	11,440	13,656	6745	3981	2784	1461	1418	..	1846	780
	Per inch circumference, foot-tons	568·3	374·1	396·8	262·0	..	..	260·6	..	150·0	78·7	73·0	..	..	..
Perforation at Muzzle, wrought iron, Tresidder's formula		25·6	20·1	22·9	16·8	23·3	26·7	18·5	17·8	15·6	12·6	..	..	14·2	10·7
Perforation Krupp Steel, 3000 yards, inches		7	5½	6	4¾	6	7	5	3½	3	..	..	..	..	..

* Smokeless powder.

There are also a Finspong 6-in. and a 44-calibre 5-pr. Hotchkiss, V. = 2362 f.s.

DUTCH NAVAL ORDNANCE.

	Krupp Breech Loading Q.F.											Dutch Breech Loading.
Designation by Calibre, in centimètres	28	24	21	21	21	No. 2.	15	15	12	12	12	12*l*
Calibre, in inches	11·0	9·4	7·91	8·2	8·2	5·87	5·9	5·9	4·72	4·72	4·72	4·72
Total Length, in feet	27·5	31·6	24·04	24·0	27·5	17·13	17·1	19·7	13·9	15·9	13·78	13·78
Length of Rifled Portion of Bore, in inches	..	..	222·2	..	..	151·4	..	..	..	..	128·5	..
Length of Powder Chamber „	..	..	42·4	..	..	37·7	..	..	..	..	24·0	..
Length of Bore, in Calibres	27	37	35	32	37·1	35	32	37	32·3	37·3	35	35
Number of Grooves	..	..	48 64	..	..	44	..	..	..	..	32	32
Depth of Grooves, inches	..	..	0·059	..	.	..	..	..	..	..	..	0·06
Twist of Rifling, in Calibres	..	..	∝–25	..	..	25	..	..	..	..	25	∝–45
Total Weight, in tons	27	25·3	12·79 13·98	14·0	16·2	4·72	3·8	4·7	1·9	2·7	2·26	2·31
Firing Charge { Armour-piercing Projectile, in lbs.	185	..	99·2	119	..	49·6	15·4	18·5	..	..	19·8	19·5
Firing Charge { Common Shell „	..	..	99·2	..	..	49·6	..	..	..	..	19·8	19·8
Weight { Armour-piercing Projectile „	761	474	308·6	309	309	112·2	100	88·2	52·4	57·4	57·3	57·3
Weight { Common Shell „	..	..	308·6	..	..	112·2	..	..	..	..	57·3	57·3
Weight { Case Shot „	..	..	..	..	..	..	..	..	..	..	57·3	..
Bursting Charge { Armour-piercing Projectile „	..	..	4·6	..	..	..	..	..	..	..	..	..
Bursting Charge { Common Shell „	20	..	12·3	..	..	..	..	..	..	..	..	..
Muzzle Velocity, feet	1627	2562	1739	1903	2067	2001	2034	2461	2034	2067	1755	1804
Muzzle Energy { Total, in foot-tons	13,960	21,589	6471	7760	9756	3115	2867	3703	1503	1689	1224	1264
Muzzle Energy { Per inch Circumference, foot-tons	..	..	260·7	..	..	169·0	..	..	..	..	82·5	85·2
Perforation at Muzzle, in inches	20·0	34·0	16·8 17·1	19·4	21·9	13·6 14·8	14·3	17·9	11·6	12·4	9·4 10·1	9·6
Perforation Krupp Steel, 3000 yards	5½	9½	3½	4½	5	..	..	..	..	..	..	..

FRENCH NAVAL ORDNANCE.

Date and Pattern of Gun.	Model 1902	Model 1893-96.				Model 1893.					Model 1887.				1884.					1881.						
Desig. by Calibre, in cms.	30·5	30·5	27·44	24·0	19·4	34·0	30·5	27·44	24·0	19·4	34	30 5	27	19	34	27	24	16	14	34 long.	34 short.	27	24	16 heavy.	16 light.	14
Calibre, in inches .	12·01	12·01	10·8	9·45	7·64	13·39	12·0	10·8	9·45	7·64	13·39	12·0	10·80	7·64	13·39	10·80	9·45	6·49	5·45	13·39	13·39	10·8	9·45	6·49	6·49	5·46
Total length, in feet .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28·47	24·89	17·04	..	33·69	25·32	27·12	23·70	15·14	15·14	14·3
Length of Bore, in ins. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	380·6	280·2	306·9	269·3	180·9	180·9	162·6
Length of Bore, in cals.	45	45	45	40	40	35	40	45	40	40	42	45	45	45	30	30	30	30	30	28·5	21·0	28·5	28·5	28	28	28
Number of Grooves .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	50	42
Depth of Grooves, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0·067	0·067	0·059	0·055	0·039	0·039	0·035
Rifling Twist . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7°	7°	7°	7°	7°	7°	7°
Total weight, in tons .	..	44·4	31 5	23·6	12·5	52·9	45·9	34·9	22·4	10·6	60·0	49·2	37·1	10·6	50·8	27·7	17·9	5·4	3·15	52·2	47·2	27·4	17·7	4·9	3·9	3·2
Weight of Firing Charge — Armour-piercing Projectile, lbs. . . .	..	246	188·5	145½	74	243·0	198·4	114·6	110·2	44·1	220·5	198·4	114·6	44·1	388·0	200·6	..	42·5	..	388·0	337·3	203·9	149·9	42·5	32·6	..
Weight of Firing Charge — Com. Shell lbs.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	200·6	..	42·5	27·1	337·3	368·2	203·9	149·9	42·5	32·6	27·1
Weight — Armour-piercing Projectile* lbs.	750	750	562	375	190	925·9	643·8	476·2	317·5	165·3	925·9	643·8	476·2	165·3	925·9	476·2	317·5	99·2	..	925·9	925·9	476·2	317·5	99·2	99·2	..
Weight — Com. Shell „	..	644	476	317	165	..	..	..	..	..	..	..	..	..	771·6	396·8	264·6	99·2	66·1	771·6	771·6	396·8	264·6	99·2	99·2	66·1
Weight — Case Shot „	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	130·7	130·7	61·7
Muzzle Velocity, in f.-s., A.P. Projectile . .	2870	2650	2650	2870	2870	2400	2625	2625	2625	2625	2560	2625	2625	2625	1969	1969	1969	1969	1969	1969	1804	1939	1969	1969	1821	1936
Muzzle Energy — Total, in f.-t. .	42890	36782	27186	21445	10890	36850	30750	22750	15170	7898	42040	30750	22750	7898	24900	12800	8539	2668	1777	24900	20880	12800	8539	2668	2080	..
Muzzle Energy — Per in. circ., f.-t.	..	..	..	..	..	..	815·8	670·7	511·1	329·1	..	815·8	670·7	329·1	591·9	377·5	287·7	130·8	103·9	591·9	496·6	377·5	287·7	130·9	121·3	..
Perforation at Muzzle† wrought iron, inches.	46·0	42·7	38·8	37·0	29·0	36·8	37·3	33·7	29·4	23·4	40·8	37·3	33·7	23·4	27·6	22·0	19·2	13·0	10·7	27·6	24·2	22·0	19·2	13·0	11·6	..
Perforation Krupp Steel 3,000 yds.	15½	13½	11½	10½	6¾	11½	11	9	7½	5½	13	11	9	5½	7½	6	5¼	3	..	7½	7	6	5¼	3	..	..

* Steel or chilled iron. † By Tresidder's formula.

A new type of the 1902 Model is under trial of 9·4-in., 7·6-in., and 3·9-in. calibre.

FRENCH NAVAL ORDNANCE—*continued.*

Date and Pattern of Gun.		16·47.	Q.F. Guns.							
			16·47	16§	16‡	14§	14	Mod. 92. 10	Mod. 91. 10	Mod. 81. 10‡
Desig. by Calibre, in cms.		16·47	16·47			13·86		10·00		
Calibre, in inches		6·46	6·46			5·44		3·94		
Total length, in feet		26·9								
Length of Bore, in inches		..								
Length of Bore, in calibres		47·5	45	45	30	45	30	60	50	26
Number of Grooves		..								
Depth of Grooves, inches		..								
Rifling Twist		..								
Total weight, in tons		8·5*	8·1	6·89	4·92	4·13	3·84	2·19	1·62	1·18
Weight of Firing Charge	Armour-piercing Projectile* . . lbs.	..	44	30·2	19·0	16·1	12·8	8·16	8·16	5·07
	Common Shell ,,	..								
Weight	Armour-piercing Projectile . . lbs.	115	115	99·21		66·14		30·87		
	Common Shell ,,	..								
	Case Shot ,,	..								
Muzzle Velocity, in ft.-secs.		3000*	2870	§2625	2100	2625	2100	2500	2428	1840
Muzzle Energy	Total, in foot-tons	7185	6568	4730	3061	3160	2022	1340	1266	725
	Per in. circ. foot-tons	..	..	233·5	150·9	184·9	118·7	..	..	..
Perforation at Muzzle, wrought iron, inches		26·3	24·5†	20·0†	14·4†	17·7†	12·7†	13·0†	12·5†	8·2†
Perforation Krupp steel, 3,000 yards		5¾	5¼	4	..	..	..	..	..	..

* Estimated. † By Tresidder's formula. ‡ Models 1881 and 1884 converted guns.

§ There are three models of the years 1887, 1891 and 1893, of slightly different weights from the above.

GERMAN NAVAL ORDNANCE.

		Krupp Steel Breech-loading Guns, designated by calibre.																		
Designation in centimètres		30·5 jack'd.	28	28	26 long.	26 jack'd.	26 short.	24 Q.F.	24 long.	24 long.	21 Q.F.	17	15 Q.F.	15 Q.F.	10·5 Q.F.	10·5 Q.F.	12·5 hoop'd.	10·5 long.	8·8	6
Calibre, in inches		12·01	11·02	11·02	10·33	10·33	10·33	9·45	9·45	9·45	8·2	6·7	5·9	5·9	4·13	4·13	4·92	3·96	3·42	2·36
Length	Total, in feet	21·98	36·75	32·15	18·77	18·77	17·06	31·50	27·56	23·63	27·4	22·3	17·6	19·7	12·1	13·9	9·60	12·08	11·3	4·1
	Rifled portion, in ins.	181·9	407·9	352·8	149·8	150·0	129·3	349·6	302·4	201·6	..	..	..	..	..	..	85·7	113·6	..	44·3
	Powder Chamber "	45·3			44·7	44·4	44·7	..	..	53·5	..	..	..	..	..	..	16·7	19·5	..	..
	Bore, in calibres	18·9	40	35	18·8	18·8	16·8	37·4	32·0	26·1	37·0	37·7	32·2	37·0	32·2	37·2	20·8	33·6	37·2	..
Number of Grooves		72	..	..	36	48	36	..	..	56	..	..	..	..	..	..	32	32	..	24
Depth of Grooves, in inches		0·079	..	..	0·077	0·079	0·077	..	..	0·059	..	..	..	..	..	..	0·059	0·049	..	..
Twist, in calibres		45	..	..	50	50	50	..	..	25	..	..	..	..	..	..	40	25	..	..
Weight	Gun, including Breech Gear, tons	35·4	43·4	43·2	21·7	18·7	17·7	25·4	21·7	18·7	14·0	7·8	4·4	5·4	1·25	2·28	1·38	1·15	..	0·10
	Breech Block, in lbs.	2954	..	..	2050	1973	1973	..	..	..	..	..	..	..	..	..	163·1	149·9	..	..
	Armour-piercing projectile, in lbs.	725·3	562·2	562·2	412·3	412·3	412·3	474·0	474·0	474·0	309	..	88	88	40	40	..	..	2·18	..
	Common Shell, in lbs.	725·3	595·0	474·0	357·1	357·1	357·1	474·0	474·0	474·0	309	154	..	..	..	..	40·1	39·7	..	6·61
Weight of Bursting Charge	Armour-piercing Shell, in lbs.	7·7	..	..	5·3	5·3	5·3	7·05	7·05	6·6	4·4	154	..	..	..	..	..	..	..	..
	Common Shell, in lbs.	19·8	25·4	25·4	14·3	14·3	22·0	16·5	16·5	15·4	11·1	..	..	..	..	..	2·4	0·9	..	..
Weight of Firing Charge	Armour-piercing Shell, in lbs.	202·8	198·0*	297·6	105·8	105·8	125·7	89·3	152	152·1	60·2	..	13·5	18·7	4·8	..	..	..	..	..
Initial Velocity	Armour-piercing projectile, ft.-secs.	1713	2700*	2133	1588	1588	1578	2296	1803	1657	2360	44	2034	2560	2034	2349	..	..	2400*	..
	Common shell, ft.-secs.	1713	..	..	1641	1641	1654	..	..	1657	..	2700	..	..	..	..	1545	1526	..	1545
Muzzle Energy	Total, foot-tons	14,750	30,000*	17,740	7211	7211	7119	17,330	10,683	9024	11,934	..	2525	4003	1119	1530	..	..	720	..
	Per in. circ., ft.-tons	391	..	512·4	223	223	220	..	401·2	304	..	7795	..	..	..	..	..	..	..	..
Perforation at Muzzle, by Tresidder's formula		20·8	39·0	26·7	15·1	15·1	15·0	29·7	20·7	18·0	26·7	25·5	13·4	19·0	10·8	13·3	..	..	10·0	..
Perforation Krupp Steel, 3000 yards, inches		5¾	11½	7¼	..	..	..	8½	5¾	5¼	6½	5¾	..	4	..	..	..	..	..	..

* Estimated.

ITALIAN NAVAL ORDNANCE.

		Armstrong Breech Loading.					Q.F.	Armstrong B.L.	Armstrong Quick-Firing.					
Designation by Calibre, in centimètres		43·1†	43·1† Early Pattern. 1882.	34·3	30·5	25·4	20·3	15·2	15·2	15·2	15·2	12·0	12·0	7·6
Calibre, in inches		17	17	13·5	12	10	8	6	6	6	6	4·7	4·7	3·0
Length	Total, in feet	40·75	39	36·09	..	34·8	..	16·9	17·0	20·9	20·9	16·2	13·0	..
	Rifled Bore, in inches	346·8	315·7	..	..	..	..	..	..	..	..	189	..	..
	Powder Chamber, in inches	84·5	98	..	..	..	..	..	..	..	..		..	..
	Bore, in Calibres	27	26	..	40	40	45	82	33·0	40	40	40	35	40
No. of Grooves		82	82	56	..	..	..	..	..	..	..	22	22	..
Twist of Rifling, in Calibres		50	50	..	..	..	..	..	..	..	..	34·4	..	..
Total Weight, in tons		104·3	101·5	67·9	..	30	..	5·4	5·1	5·7	6·5	2·05	1·69	0·6
Firing Charge	Armour-piercing projectile, lbs.	900·0	725	630·5	..	..	..	46	46	46	17·6*	..	..	..
	Common Shell, „	600	480	..	..	..	..	..	..	..	..	..	..	..
Weight	Armour-piercing projectile, „	2000	2000	1250	850	448	250	98	98	100	100	45·0	36·0	12
	Common Shell, „	2000	2000	1250	..	..	..	..	..	..	..	..	36·2	..
	Shrapnel „ „	2017	2017	1250	..	..	..	..	..	..	..	..	29·8	..
	Case Shot „	..	..	..	..	..	..	..	..	..	..	..	..	..
Bursting Charge	Armour-piercing projectile, „	32	32	17·4	..	..	..	2·0	2·0	5·1	4·4	..	1·83	..
	Common Shell, „	60	60	87·1	..	..	..	..	..	..	..	..	3·02	..
	Shrapnel „ „	5	5	4·25	..	..	..	..	..	..	..	..	0·35	..
Muzzle Velocity, in ft.-secs.		1992	1935	2016	2500	2460	2600	1952	1985	2149	2297	2180	..	2625
Muzzle Energy	Total, foot-tons	55,030	51,930	35,230	36,925	18,798	11,730	2577	2705	3169	3622	1490	..	573
	Per inch circumference, foot-tons	1035	976·3	830·8	..	..	..	..	..	..	..	..	..	..
Perforation at Muzzle, inches of iron by Tresidder's formula		36·7	35·0	33·0	40·0	31·0	28·3	13·2	13·6	15·4	17·0	12·4	..	10·2
Perforation Krupp Steel, 3000 yds., inches		12½	12	11	13	9	7	..	..	..	3½	..	..	..

* Ballistite. † There are four types of these guns, viz.—Lauria, Lepanto, Italia, Morosini.

Note.—There is also a 6-inch quick-firing gun, 40 cals. M.V., 2600 f.s.

The weight of Ballistite charges is not known, but it is understood that they give the same ballistics as the powder charges shown.

RUSSIAN NAVAL ORDNANCE.

	Obukhoff Steel Breech Loading Hooped Guns				Steel B.L. Guns.		
Designation by Calibre, in inches	12	9	8	6 Long.	4·2 9-pdr.	3·43 Long. 4-pdr.	3·43 4-pdr.
Calibre in centimètres	30·48	22·86	20·32	15·24	10·67	8·70	8·70
Total Length, in feet	35	26·25	23·33	17·5	7·0	6·9	5·8
Length of Rifled Portion of Bore, in inches	..	..	..	..	65·0	62·6	53·0
Length of Powder Chamber, in inches	..	..	..	..	8·0	10·7	..
Length of Bore in Calibres, including Powder Chamber	31·9	35	35	35	17·4	21·4	..
Number of Grooves	..	..	..	..	16	24	12
Depth of Grooves in ins.	..	..	..	..	0·055	0·050	0·050
Twist of Rifling in cals.	..	..	..	..	50	40	41
Total Weight, in tons	55·7	19·44	13·64	6·26	0·87	0·45	0·35
Weight of Steel Shell, in lbs.	731	..	..	..	..	..	..
Weight of Chilled Shell, „	..	..	..	..	..	..	..
Weight of Common Shell, „	..	268·2	192·3	73·35	24·2	15·2	12·6
Weight of Case Shot, „	..	..	..	..	22·3	15·2	11·0
Weight of Firing Charge Steel Shell, „	338	..	..	89·38	..	..	..
Weight of Firing Charge Chilled Shell, „	..	..	..	39·6	..	..	..
Weight of Firing Charge Common Shell, „	..	180	88·2	39·6	2·6	3·1	1·3
Muzzle Velocity, in feet	2090	2376	1925	2080	..	1444	..
Muzzle Energy Total, foot-tons	22130	10,500	..	2682	..	..	..
Muzzle Energy Per Inch Circumference, foot-tons	587·1	371·4	..	142·3	..	..	..
Perforation at Muzzle, in inches	..	20·2	..	12·50	..	..	..
Perforation at Muzzle, by Tresidder's formula	28·3	24·0	15·7	..	..	..	..
Perforation Krupp Steel, 3000 yds., inches	8	6	..	..	..	..	..

NEW PATTERN RUSSIAN NAVAL GUNS.

The following guns are in use in the Russian Navy, the ballistics being somewhat as under :—

	12-in.	10-in.	9-in.	8-in.
Weight	59 tons	32 tons	..	..
Length	40 cals.	45 cals.	45 cals	45 cals.
Projectile	720 lbs	488 lbs	403 lb.	188 lbs
Muzzle Velocity	2600 f.s	2600 f.s	2500 f.s	2800 f.s
Perf. Wt. Ir. Muzzle	38 ins.	35 ins.	32 ins.	27 ins.
Perf. Wt. Ir. 2000 yds.	30 „	27 „	24 „	20 „
Perf. K.S. 3000 yds.	12 „	10½ „	8½ „	6½ „

Q.F. GUNS.

	6-in.	4·7-in.	12-pdr.
Length	45 cals.	45 cals	50 cals.
Projectile	89 lbs.	46 lbs.	12 lbs.
Muzzle Velocity	2900 f.s.	2600 f.s.	2700 f.s.
Perf. Wt. Ir. Muzzle	22½ ins.	15½ ins.	10·2 ins.
Perf. Wt. Ir. 2000 yds.	13 „	9 „	4·8 „
Perf. K.S. 3000 yds.	4¾ „	..	..

There exist also 15 and 10·7 cm. Krupp guns.

SPANISH NAVAL ORDNANCE.

	Hontoria, Pattern 83.								Armstrong, Pattern 83.			Armstrong.			Krupp.							
	Breech Loading.											Muzzle Loading.		Pattrn. 81 B.L.	Breech Loading.		Q.F. guns.					
Designation by Calibre	32-cm.	28-cm.	24-cm.	20-cm.	18-cm	16-cm.	14-cm	12 cm.	12-cm.	8·7-cm.	7·5-cm. long.	22·86-cm	20·3-cm	6-in.	15-cm.	12-cm.	15-cm.	14-cm.	12-cm.	75-mm.	57-mm.	47-mm.
Calibre, in inches . .	12·60	11·02	9·45	7·87	7·09	6·34	5·51	4·72	4·72	3·4	2·95	9·00	8·00	6·00	5·87	4·72	5·9	5·51	4·72	2·95	2·24	·85
Length: Total length, in feet	38·7	33·8	29·0	..	21·75	19·3	16·91	14·5	13·75	7·9	7·50	13·0	11·0	14·5	17·13	11·81	19·6	20·7	..	..	..	..
Length: Rifled Portion, in inches	352·4	309·1	..	..	..	170·6	149·1	126·0	135·8	75·0	70·7	104·0	102·0	126·9	..	..	..	..	..	..	..	..
Length: Powder Chamber, in inches	86·8	77·1	..	..	..	49·8	53·9	39·4	19	13	13	..	..	29·7	..	..	..	..	..	..	..	..
Length: Bore, in calibres	35	35	30	..	30	35	35	35	33	27	28·7	14	14·75	26·1	35	30	37	45	45	40	42	40
No. of Grooves . . .	80	70	60	50	45	40	35	30	22	20	18	6	4	28	36	32	..	..	..	..	..	..
Depth of Grooves, in ins.	0·06	0·06	0·05	0·06	0·04	0·04	0·04	0·04	0·03	0·03	0·03	0·18	0·18	..	0·06	0·06	..	..	..	..	..	..
Twist of Rifling, in cals.	From 0 to 30.								40	30	35	45	40	100 to 40	25	25	..	..	..	..	..	..
Total Weight, in tons .	47·3	32·5	20·7	11·5	8·71	6·1	4·1	2·6	2·2	0·45	0·35	12·0	9·0	4·0	4·7	2·1	4·39	4·8	2·65	0·9	0·34	0·23
Weight: Armourpiercing projectile, in lbs	1041	694·3	438·7	253·5	187·4	130·1	86·0	53·1	39·2	..	..	250·0	180·0	78·3	84·9	43·65	100	70	55	14	6	3·3
Weight: Common Shell, in lbs.	879·6	586·4	370·4	213·8	..	112·4	75·0	47·2	36·4	14·1	11·5	250·0	180·0	73·6	65·5	34·61	..	..	..	..	..	..
Weight: Ring Segment in lbs.	886·3	590·8	370·4	211·6	..	112·4	75·0	47·6	38·6	15·4	11·7	..	..	83·6	..	34·61	..	..	..	..	..	..
Firing Charge: Armour-piercing projectile, in lbs.	485·0	352·7	220·5	112·4	94·8	66·1	44·1	28·7	16·0	..	..	50·0	35·0	34·0	37·48	19·29	..	..	15·4	7·1	1·93	..
Firing Charge: Other projectiles	463·0	319·7	220·5	..	..	61·7	..	28·7	11·9	4·0	4·0	33·0	21·0	24·9	25·4	..	..	..	..	..	..	..
Muzzle Velocity, in feet	2034	2034	2034	2034	2034	2054	2001	1988	2000	1625	1709	1339	1339	1929	2001	1887	2264	2460	2423	2100	1870	2330
Muzzle Energy: Total, in ft.-tons	29850	24030	12580	7271	5374	3806	2386	1511	1087	258	233	3105	2239	2018	2357	1076	3554	2936	2238	428	145	124
Perforation at Muzzle, in inches	32·9	28·7	24·6	20·5	18·6	16 6	13·9	11·6	9·3	..	..	10·6	9·6	11·0	12·7	9·7	17·0	16·5	15·5	7·9	5·0	5·7
Perforation Krupp Steel, 3000 yards	11	8	6¼	4¾	4¼	3½	..	..														

Note.—The Carlos V. has 11-in. 45-cal. guns. M.V. probably 2500 f.s.

NAVAL ORDNANCE OF SWEDEN AND OF NORWAY.

	Sweden.										Norway.								
	Armstrong.					Bofors.	New Pattern Q.F.		M. 85.	M. 89.	Modern Guns.								
Designation by Calibre, in cms.	15·2	25	25	25	24	21	15 Q.F.	12 Q.F	25	15	21	21 Q.F.	21 Q.F.	15	15 Q.F.	12 Q.F.	12 Q.F.	76mm.	7cm.
Calibre, inches	6·0	10	10	10*	9·45	8·2	5·9	4·7	10·00	6·0	8·24	8·0	8·24	5·9	..	4·7	4·7	3·0	2·8
Total Length, feet	..	33·4	29·5	28·6	27·0	30·7	22·2	17·9	28·33	16·98	24·0	27·9	31·3	19·6	..	..	..	..	..
Length { Rifled Portion of Bore, ins.	..	..	..	..	..	..	..	..	260·9	155·2	..	..	..	..	..	..	..	..	..
Length { Chamber, ”	..	..	..	..	..	..	..	..	58·1	35·2	..	..	..	..	..	..	..	..	..
Length { Bore in calibres, ”	50	40	32	35	32·4	43	43	43·3	32·9	32	32	40	43·8	37·1	43·8	45	43·9	40	38
Number of Grooves	..	..	..	..	..	..	..	..	42	28	..	..	..	..	..	..	..	..	..
Twist of Rifling	..	..	..	..	..	..	..	..	40	30	..	..	..	..	..	..	..	..	..
Total Weight, tons	7·8	30*	29·5	28·6	23·5	16·3	5·8	2·7	29·8	5·2	13·9	15·5	18·7	5·6	..	3·1	2·65	0·6	0·63
Weight of { Armour-piercing Shell in lbs.	100	450	450	450	400	309	100	46	449·7	100	309	210	309	112	..	46	45	12·5	10·3
Weight of { Common Shell, in lbs.	..	..	401	401	..	..	..	..	401·2	100	..	..	..	..	..	..	..	..	..
Weight of Firing Charge { Armour-piercing Shell, in lbs.	37·5	160†	242	†	182	..	18	9·15	242·5	54·0	115	32	47	58·4	..	6·6	8·4	1·7	1·9
Weight of Firing Charge { Common Shell, lbs.	..	..	..	..	..	..	..	..	242·5	..	..	..	..	..	..	..	..	..	..
Muzzle Velocity, feet.	2800	2600*	2100	2362	2051	2297	2460	2428	2100	2067	1903	2242	2300	2070	2502	2361	2570	2200	2379
Muzzle Energy, Total foot-tons	5442	21120	13760	17406	11670	11303	4196	1893	13750	2964	7760	7319	11344	3328	..	1785	2060	419	404
Perforation through Iron by Tresidder's formula	22·8	33·6	24·5	29·2	22·9	25·7	18·9	14·2	24·5	13·9	19·2	20·2	25·6	15·6	..	13·6	15·3	8·0	8·4
Perforation Krupp Steel, 3000 yds.	4¾	10½	6	8	6	6½	4¼	..	6½	..	4¾	4¾	6½	..	..	..	..	..	..

* Schneider-Canet. There are also 6-pdrs., with M.V. 2165 f.s. to 2310 f.s., and 3-pdrs., with M.V. 2428 f.s. † Smokeless powder.

UNITED STATES NAVAL ORDNANCE.

NATURE OF GUN.	Calibre.	Weight.	Total Length.	Total Length of Bore.	Length of Rifling.	Twist of Rifling	Length of Chamber.	Weight of Service Charge.		Weight of Projectile.	Muzzle Velocity (Service).	Muzzle Energy.	Perforation of Wrought Iron at Muzzle.†	Perforation of Krupp Steel at 3000yds.
								Brown Powder.	Smokeless Powder.		Brown Powder.			
	inch.	tons.	feet.	inch.	inch.		inch.	lbs.	lbs.	lbs.	ft.-seconds.	ft.-tons.	inch.	inch.
3-in. (14 pr.)	3	0·87	12·5	149·7	125·5	..	21·3	..	5	14	3000	874	13·5	..
4-in. Q.F., Mark I.	4	1·5	13·7	157·3	130·3	zero to 1 in 25	24·7	12 to 14	..	33	2000	915	9·8	..
4-in. Q.F. Gun	4	1·5	13·7	157·5	128·1	..	25·4	..	..	33	2000	..	9·8	..
4-in. Q.F., Mark VII., of 50 Cals. .	4	2·56	17·0	200·0	168·4	..	31·6	..	15	32	2900	1,999	16·9	..
5-in. Q.F., Mark I.	5	2·8	13·5	150·3	120·8	1 in 180 to 1 in 30	27·1	26 to 29	..	60	2000	1,660	11·8	..
5-in. Q.F. Gun	5	3·1	17·4	191·5	164·4	zero to 1 in 25	32·0	28 to 30	..	50	2300	1,834	13·2	..
5-in. Q.F., Mark V.	5	4·46	21·3	250	212·9	..	37·2	..	27	60	2900	3,503	20·5	4¼
6-in. B.L.R., Mark I.	6	4·8	15·8	176·0	136·7	1 in 180 to 1 in 30	36·9	50	..	100	2000	2,773	..	..
6-in. B.L.R., Mark II.	6	4·9	16·1	180·1	144·9	..	32·7	45 to 48	..	100	2000	..	13·8	..
6-in. B.L.R., Mark III., of 30 Cals. .	6	4·8	16·3	183·8	147·3	zero to 1 in 25	34·0	44 to 47	..	100	2000	..	..	..
6-in. B.L.R., Mark III., of 35 Cals. .	6	5·2	18·8	213·8	177·3	..	34·0	..	..	100	2080	2,990	14·7	..
6-in. B.L.R., Mark III., of 40 Cals. .	6	6·0	21·3	243·8	207·3	..	34·0	..	..	100	2150	3,204	15·4	..
6-in. Q.F. Gun	6	6·0	21·3	243·8	204·3	..	37·0	44 to 47	..	100	2150	3,200	15·4	..
6-in. Q.F., Mark VI.	6	8·17	25·0	293·7	245·3	..	48·4	..	46	100	2900	5,838	24·2	5
7-in. Q.F.	7	..	..	..	..	..	..	..	74	165	2900	9,646	28·7	6½
8-in. B.L.R., Mark I.	8	12·3 12·9	21·5	239·9	195·2	1 in 180 to 1 in 30	42·1	105 to 115	..	250 250	2000 2000	6,932	19·0	4½
8-in. B.L.R., Mark II.	8	13·0	21·5	239·9	195·2	..	42·1	..	..	..	..	..	19·0	4½
8-in. B.L.R., Mark III., of 35 Cals. .	8	13·1	25·4	290·5	242·8	zero to 1 in 25	45·1	..	..	250	2080	7,498	20·1	4¾
8-in. B.L.R., Mark III., of 40 Cals. .	8	15·2	28·7	330·5	282·8	..	45·1	..	..	250	2150	8,011	21·1	5
8-in. B.L.R., Mark V., of 45 Cals. .	8	18·0	28·6	335·0	271·0	..	64·0	..	115	250	2800	13,602	31·4	8
10-in. B.L.R., Mark I., of 30 Cals. .	10	25·7	27·4	306·3	247·3	1 in 180 to 1 in 35	57·2	225 to 240	..	500	2000	13,864	24·0	6½
10-in. B.L.R., Mark I., of 35 Cals. .	10	27·1 28·2	30·5	343·8	283·7	zero to 1 in 25	57·2	..	..	500	2060	14,709	25·0	6¾
10-in. B.L.R., Mark II., of 30 Cals. .	10	25·1	27·4	307·3	247·3	zero to 1 in 26·8	57·2	..	..	500	2000	13,864	24·0	6½
10-in. B.L.R., Mark II., of 35 Cals. .	10	27·6	31·2	354·9	294·9	zero to 1 in 25	57·2	..	..	500	2100	15,285	25·8	7
10-in. B.L.R., Mark III., of 40 Cals. .	10	33·4	33·3	389·0	313·4	..	75·6	..	240	500	2800	27,204	42·0	12
12-in. B.L.R., Mark I.	12	45·2	36·8	419·2	343·1	..	74·1	425	..	850	2100	25,985	30·8	9
12-in. B.L.R., Mark III., of 40 Cals. .	12	52	41·8	480·1	388·1	..	91·9	..	350	850	2800	46,246	47·2	16
13-in. B.L.R., Mark I. and II. . .	13	60·5	40·0	454·5	370·5	..	80·9	..	230	1100	2100	33,627	33·5	11

NOTE.—The weight of fixed ammunition for Q.F. 4-in. and 5-in. guns is 58 and 95 lbs. respectively.

† By Tresidder's formula.

ELSWICK GUNS.

This Table is supplied by the Manufacturers.

					*			Pole Gun.				Naval Landing.	Field.	Field.	Horse Artillery.	Field.	Jointed Howitzer.			Howitzer.	Howitzer.				Field Position.	Howitzer.		Howitzer.		
Diameter of Bore, ins.	1·46	1·46	1·85	1·85	1·85	2·24	2·24	2·953	3	3	3	3	3	3	3	3·3	3·3	3·5	4	4·3	4·7	4·7	4·7	4·7	5	5	5·87	6	6	6
do. do. mm.	37	37	47	47	47	57	57	75	76	76	76	76	76	76	76	84	84	89	102	109·2	120	120	120	120	127	127	149	152	152	152
Length of Bore, cals.	25	45	40	50	46	40	50	14·13	40	50	50	22	28	30	23	28	16	40	50	12·5	12	40	45	50	32	8·4	46	12	40	45
Weight of Gun	lb. 79	lb. 268	lb. 506	lb. 1067	lb. 560	lb. 840	cwt. 10¼	lb. 210	cwt. 12	cwt. 18¼	cwt. 18¼	cwt. 6·0	cwt. 7·25	cwt. 7·5	cwt. 6	cwt. 9	lb. 407	cwt. 24	cwt. 41·0	cwt. 7	cwt. 10	cwt. 42	cwt. 53	cwt. 66	tons 2	cwt. 9	tons 7	cwt. 25	tons 6·6	tons 7·35
do. Projectile, lbs.	1·1	1·5	3·3	3 3	3·3	6	6	11·75	12¼	14	12·5	13·2	15	14·3	12·5	18·5	15	20	31	40	45	45	45	45	60	50	99·25	100	100	100
do. Cordite Charge [lbs	oz. 1·125	oz. 4.5	oz. 7·94	lb.oz. 1 4¼	oz. 8·0	oz. 9·2	...	oz. 6	lb.oz. 1 10	lb oz. 3 0	lb.oz. 3 4	lb.oz. 1 1¼	lb.oz. 1 3	oz. 16·375	lb.oz. ...	lb.oz. 1 3¾	oz. 11	4·0	...	oz. 15·75	1·5	lb.oz. 5·5	8 2¼	..	8·5	oz. 11·5	21·5	2·1	18·3	26
do. M.D. do., lbs.	...	...	...	1 6	...	...	lb.oz. 1 3	...	2 0	3 11	4·0	...	..	...	1 4	1 8	...	...	10	...	...	...	...	15	...	...	...	...	...	32
Muzzle Velocity, f.s.	1540	2300	2132	2800	2300	1968	2400	1070	2210	2690	2800	1700	1700	1650	1700	1635	1090	2430	2850	980	1070	2200	2552	3000	2115	782	2625	857	2500	2800
Muzzle Energy, f.t.	18	55	104	179	121	161	240	93	473	702	680	265	300	270	250	336	123	819	1746	266	357	1510	2110	2808	1861	212	4742	509	4334	5436
Penetration at Muzzle, ins.	1·9	4·3	5·2	7·8	5·7	5·6	8·0	...	8·8	11·9	11·6	...	...	...	...	...	...	11·0	16·0	...	...	11·6	15·1	19·45	12·9	...	21·5	...	19·5	25·7
Rounds per Minute ...	...	25	30	30	30	25	25	20	20	20	20	20	20	20	20	20	...	17	15	...	...	12	12	12	10	...	10	..	10	10

Diameter of Bore, ins.	6	7·5	7·5	8	8	8·24	9·2	9·2	10	10	10	12	12	12
do. do. mm.	152	190	190	203	203	210	234	234	254	254	254	305	305	305
Length of Bore, cals.	50	45	50	45	50	44	46	50	40	45	50	40	40	45
Weight of Gun	tons 8·75	tons 13·8	tons 15	tons 18·0	tons 21	tons 18·1	tons 26·65	tons 28	tons 31	tons 34	tons 41	tons 48·5	tons 51	tons 58
do. Projectile, lbs.	100	200	200	250	250	308·6	380	380	450	500	500	850	850	850
do. Cordite Charge [lbs.	36	...	...	...	...	47	...	...	81·5	...	...	141	...	...
do. M.D. do., lbs.	37	74·25	76	66	90	52	134	151	86·5	167	200	155	282	325
Muzzle Velocity, f.s.	3050	2900	3000	2600	3000	2300	2750	3030	2400	2800	3000	2400	2650	2900
Muzzle Energy, f.t.	6492	11663	12481	11781	15600	11320	19926	24190	17973	27181	33318	33949	41386	49568
Penetration of Muzzle, ins.	26·3	31·8	32·75	23·6	35·7	27·0	34·0	41·4	29·9	39·8	45·1	38·4	44·6	51·0
Rounds per Minute ...	10	5	5	5	5	5	4	4	3	3	3	2	2	2

Some Results Actually Obtained.

12 pr. 50 cals., Kite: 10 rounds in 31 seconds.

4·7-in. 42 cwt. gun with single motion breech mechanism: 5 rounds in 22 seconds at Silloth at a target—2 hits, range 1000 yards; 7 rounds in 25 seconds at drill.

Barfleur prize firing, 4·7-in. Q.F., 5·7 hits per gun per minute.

6-in. twin mounting, Cumberland: 5 pair rounds in 109 seconds.

6-in. gun with single motion breech mechanism: 7 rounds in 61 seconds at Silloth, Cordite charge; 4 rounds in 20 seconds at drill.

Terrible (China), prize firing, 6-in. Q.F., 4·25 hits per gun per minute, and 11 rounds in 2 minutes.

Ariadne prize firing, 6-in. Q.F., 19 rounds, 17 hits in 2 minutes.

7·5-in. gun, Carnarvon: 8 rounds in 111 seconds; Hampshire, 6 in 60 secs.; Swiftsure, 11 in 2 mins., 7 hits.

9·2-in. gun, Aboukir: 5 rounds in 85 seconds.

9·2-in. gun, King Edward VII.: 6 rounds in 110 seconds.

12-in. gun, interval 49 seconds, Illustrious: 6 rounds were fired from 1 turret in 1 minute 47 seconds.

Pair 12-in. guns, Goliath, 8 rounds in 2 minutes 10 seconds.

Ocean (China), prize firing, 12-in. B.L., 0·54 hits per gun per minute.

Mars (Channel) „ „ 0·42 „ „

Russell, battle practice, 12-in. barbette, 5 hits per gun per minute.

* Also arranged for Landing Carriage.

X

VICKERS, SONS & MAXIM'S GUNS AND MOUNTINGS.

This Table is supplied by the Manufacturers.

		37 mm. 30 cal.	37 mm. 42·5 cal.	3-pdr. 50 cal.	6-pdr. 50 cal.	Mountain. 12-pr. 14·3 cal.	Field.		3-in. 50 cal.	4-in. 50 cal.	4·7-in. 45 cal.	4·7-in. 48·4 cl.	14 cm. 45 cal.	6-in. 45 cal.	6-in. 50 cal.	7·5-in. 45 cal.	7·5-in. 50 cal.	8-in. 45 cal.	8-in. 50 cal.	9·2-in. 47 cal.	9·2-in. 50 cal.	10-in. 45 cal.	12-in. 40 cal.	12-in. 45 cal.
							Light. 3-in. 22.64 cal.	Heavy. 3-in. 29 cal.																
Gun.	Diameter of Bore .ins.	1·457	1·457	1·85	2·244	3	3	3	3	4	4·724	4·724	5·512	6	6	7·5	7·5	8	8	9·2	9·2	10	12	12
	Length of Bore . .ins.	43·5	62	92·5	112·2	42·94	67·92	87·2	150	201·15	212·6	228·45	248	269·5	300	337·5	375	360	400	429·3	460	450	480	540
	Length of Gun . .ins.	73·75	94	98·9	118·6	47·23	72·22	90·63	154	208·45	220	236·2	257·7	279·2	310·07	349·2	386·7	372·1	412·125	442·35	473	464·9	496·5	557·55
	Maximum pressure in Chamber, tons per sq. in.	13	14	17	16	12	14·5	15	17	18	17	18	16·5	17·75	18	18	17·5	17	18	18	18	18	18	18
	Weight of Charge lbs.	·0782	·1875	1·066	1·55	·52	1·078	1·875	5·375	11·25	19·5	17	21·875	35·25	43	78·25	80·03	94	123·5	170·5	184	250	309	356
	Weight of Projectile lbs.	1	1·25	3·3	6	12·5	12·5	17·63	12·5	31	45	45·14	88·19	100	100	200	200	250	216·7	380	380	496·7	850	850
	Weight of Gun . . .	c. q. l. 3 2 24	c. q. l. 5 1 19	c. q. l. 5 2 4	c. q. l. 8 3 8	c. q. l. 2 1 15	c. q. 5 3	c. q. 7 2	c. q. l. 16 1 16	t. c. q. 2 1 3	t. c. q. 3 3 3	t. c. 3 13	t. c. 5 18	t. c. q. 7 8 2	t. c. 7 16	t. c. q. 14 0 2	t. c. 16 0	t. c. q. 18 16 2	t. c. 16 19	t. c. 28 1	t. c. q. 27 16 1	t. c. 34 11	t. c. 50 7	t. c. 57 14
	Muzzle Velocity . .f.s.	1800	2350	2800	2600	1150	1700	1700	3000	3030	2925	3050	2860	3012	3190	2875	3007	2850	3300	3025	3110	3000	2750	3000
	Muzzle Energy . .f.t.	22·5	48	179·4	281	115	250	353·4	780	1975	2670	2910	4990	6290	7055	11465	12540	14080	16360	24110	25485	30990	44570	53045
	Penetration of Wrought Iron Plate at Muzzle. Gavre formula . .ins.	1·9	3·3	6·7	7·5	..	..	..	11·25	16·0	16·65	17·8	22·1	23·65	25·8	28·75	30·75	31·1	34·6	39·25	40·85	43·2	45·8	51·9
	Penetration of Mild Steel Plate at Muzzle. Gavre formula . . . .ins.	1·5	2·6	5·1	5·4	..	..	..	8·7	12.4	12·9	13·8	17·1	18·4	20·0	22·25	23·7	24·1	26·8	30·45	31·7	33·55	35·5	40·2
	Penetration of Hard Steel Plate at 3000 yards. Gavre formula . .ins.	..	..	..	..	..	..	..	..	..	..	4·5	6·2	6·3	6·0	8·9	9·35	10	10·1	13·35	13·85	15·3	17·45	19·6
	Rounds per minute . .	300	300	30	28	14	20	20	20	15	12	12	10	10	10	8	8	6	6	4	4	3	2	2
Mounting.	Weight of Mounting complete with Shield . .	c. q. l. 4 1 10	c. q. l. 3 2 5	c. q. 11 2	c. q. l. 14 2 9	c. q. l. 6 3 7	Weight of equipment with 18 rounds. t. c. q. 1 8 3	Weight of equipment with 36 rounds. t. c. 1 16	t. c. q. 1 6 1	t. c. q. 4 1 2	t. c. 3 16	t. c. q. 5 14 1	Depending on type of Mounting used.											
	Thickness of Shield .ins.	¼	no	25	no	⅛	⅛	no	2	no	2 & 5/16	3												
	Weight of Shield . . .	q. l. 3 11	shield	c. q. l. 1 0 12	shield	q. l. 1 15	1 cwt.	shield	c. q. 9 0		t. c. q. 1 4 3	t. c. q. 1 17 2												
	Angle of Elevation . .	16°	13°	20°	20°	25°	16°	16°	20°	15°	20°	20°												
	Angle of Depression . .	25°	25°	20°	10°	15°	8°	8°	10°	10°	7°	10°												

SCHNEIDER - CANET GUNS.

The information in this Table is given by the Manufacturers.

Calibre, in millimètres.	305		274·4		240		210		200		175		150		120		100		75		65		57		47	37
Calibre, in inches	12·0	12·0	10·9	10·9	9·4	9·4	8·3	8·3	7·9	7·9	6·9	6·9	5·9	5·9	4·7	4·7	3·9	3·9	2·9	2·9	2·5	2·5	2·21	2·21	1·8	1·4
Length, in calibres	45	50	45	50	45	50	45	50	45	50	45	50	45	50	45	50	45	50	50	60	50	60	50	60	60	60
Weight, in tons	52·9	57·3	38·5	41·7	25·8	27·9	17·3	18·6	14·9	16·2	10·0	10·8	6·3	6·8	3·2	3·5	1·9	2·0	·85	1·2	·55	·76	·45	·55	·30	·17
Weight of A.P. Projectile, lbs.	826	826	606	606	407	407	275	275	231	231	165	165	99	99	48	48	28·6	28·6	14·3	14·3	8·8	8·8	6	6	3·3	1·76
Weight of Charge	Not	stated																								
Muzzle Velocity, ft.-secs.	2952	3116	2952	3116	2952	3116	2952	3116	2952	3116	2952	3116	2952	3116	2952	3116	2952	3116	2871	3035	2952	3116	2952	3116	3116	3116
Muzzle Energy, ft.-tons	50007	55717	36670	40859	24667	27487	16667	18572	14002	15601	10000	11143	6001	6686	2932	3268	1734	1931	820	917	533	594	362	400	223	119
Perforation of Steel at muzzle (ins.)	38·3	41·6	34·6	37·4	30·1	32·3	26·2	28·3	24·3	26·3	22·1	23·9	18·2	20·1	13·9	15·0	11·6	12·5	9·3	10·0	7·9	9·1	7·1	7·5	5·9	5·0
Perforation of Steel at 3000 yards (ins.)	29·3	31·9	25·5	27·8	21·2	23·1	17·5	19·2	16·1	17·3	13·8	15·2	10·2	11·8	6·4	6·9	4·6	4·9	..	..	..	..	..	..	..	..

KRUPP QUICK-FIRING GUNS, Mark 1901.

Tables supplied by Manufacturers.

NAVAL GUNS.

Calibre, in centimètres	7·5			10·5			12			15			21			24			28			30·5		
Calibre, in inches	2·95			4·13			4·72			5·91			8·27			9·45			11·02			12·01		
Total Length of Gun, in cals.	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50
Total Length, in feet	9·84	11·07	12·30	13·78	15·5	17·22	15·75	17·7	19·69	19·55	22·00	24·44	27·56	30·9	34·45	31·50	35·4	39·37	36·75	41·3	45·93	40·03	45·0	50·03
Length of Bore, in inches	108·66	123·43	138·19	153·55	174·21	194·89	175·20	199·25	222·45	218·12	247·49	276·78	305·91	347·29	388·59	350·80	398·28	445·28	409·46	464·62	519·70	445·67	505·95	565·76
Weight of Gun, in lbs.	1488	1711	1936	3748	4189	4740	5512	6283	7055	10582	12015	13558	29321	33279	37258	44092	50265	56438	70105	79807	89507	90609	103174	120141
Weight of Gun, in tons	0·66	0·76	0·86	1·67	1·86	2·11	2·45	2·79	3·14	4·70	5·34	6·03	13·03	14·80	16·56	19·60	22·34	25·09	31·16	35·48	39·79	40·28	45·86	51·45
Weight of Steel Projectile, in lbs.	11·5	11·5	11·5	30·86	30·86	30·86	46·30	46·30	46·30	90·39	90·39	90·39	249·1	249·1	249·1	374·8	374·8	374·8	595·2	595·2	595·2	771·6	771·6	771·6
	14·6	14·6	14·6	39·68	39·68	39·68	59·52	59·52	59·52	112·4	112·4	112·4	308·6	308·6	308·6	474·0	474·0	474·0	760·6	760·6	760·6	981·0	981·0	981·0
Weight of Charge, in lbs.	2·77	3·12	3·54	10·47	12·57	14·33	15·66	17·97	20·62	29·99	34·40	39·47	82·47	94·59	108·71	124·58	143·10	164·27	198·41	227·07	262·35	255·73	293·21	337·30
Muzzle Velocity, in ft.-secs.	2690	2890	3068	2835	3022	3199	2877	3038	3225	2854	3008	3196	2851	3015	3196	2854	3018	3199	2854	3018	3202	2854	3018	3199
	2388	2566	2723	2500	2661	2822	2539	2677	2841	2556	2697	2858	2559	2707	2868	2533	2687	2845	2523	2664	2835	2526	2674	2838
Muzzle Energy, total ft.-tons	576	665	749	1720	1952	2191	2659	2969	3340	5099	5680	6389	14037	15684	17620	21169	23718	26655	33561	37595	42435	43564	48728	54859
Perforation through Steel, in ins.	7·13	7·91	8·58	10·87	11·92	12·93	12·87	13·90	15·15	16·15	17·41	18·98	23·20	25·13	27·30	26·96	29·20	31·73	31·80	34·45	37·48	34·94	37·84	41·10
Perforation through Iron, Tresidder's formula	9·9	11·0	11·7	14·7	17·24	18·77	18·35	19·91	21·77	22·66	24·52	26·84	31·73	34·51	37·65	36·47	39·66	43·27	42·52	46·28	50·57	46·42	50·47	55·08
Perforation Krupp Steel, 3000 yards	..	..	..	..	..	..	3·52	3·74	4·02	4·98	5·29	5·66	8·14	8·65	9·22	9·84	10·45	11·13	12·11	12·86	13·70	13·58	14·41	15·33

COAST GUNS.

Calibre, in centimètres	7·5			10·5			12			15			21			24			28			30·5		
Calibre, in inches	2·95			4·13			4·72			5·91			8·27			9·45			11·02			12·01		
Total Length of Gun, in cals.	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50	40	45	50
Total Length, in feet	9·84	11·07	12·30	13·78	15·5	17·22	15·75	17·7	19·69	19·55	22·00	24·44	27·56	30·9	34·45	31·50	35·4	39·37	36·75	41·3	45·93	40·03	45·0	50·03
Length of Bore, in inches	108·66	123·43	138·19	153·55	174·21	194·89	175·20	199·25	222·45	218·12	247·49	276·78	305·91	347·29	388·59	350·80	398·28	445·28	409·46	464·62	519·70	445·67	505·95	565·76
Weight of Gun, in lbs.	1861	2094	2326	4519	5115	5688	6724	7606	8188	12897	14661	16314	35715	40344	44974	53792	60847	67902	85538	96782	108025	110671	125001	139772
Weight of Gun, in tons	0·83	0·93	1·03	2·01	2·27	2·53	2·99	3·38	3·77	5·72	6·52	7·25	15·88	17·93	19·99	23·92	27·05	30·18	38·02	43·02	48·02	49·20	55·57	62·13
Weight of Steel Projectile, in lbs.	11·5	11·5	11·5	30·86	30·86	30·86	46·30	46·30	46·30	90·39	90·39	90·39	249·1	249·1	249·1	374·8	374·8	374·8	595·2	595·2	595·2	771·6	771·6	771·6
	14·6	14·6	14·6	39·68	39·68	39·68	59·52	59·52	59·52	112·4	112·4	112·4	308·6	308·6	308·6	474·0	474·0	474·0	760·6	760·6	760·6	981·0	981·0	981·0
Weight of Charge, in lbs.	2·99	3·35	3·76	11·80	13·45	15·32	17·53	19·96	22·93	33·52	38·15	43·88	92·59	105·40	120·83	140·02	159·42	182·57	222·67	253·53	291·00	286·60	326·28	374·78
Muzzle Velocity, in ft.-secs.	2876	2999	3123	2930	3107	3281	2920	3097	3268	2882	3068	3242	2887	3068	3245	2897	3074	3248	2897	3074	3251	2894	3068	3248
	2664	2775	2885	2582	2740	2894	2572	2733	2887	2589	2753	2900	2592	2756	2913	2576	2733	2887	2562	2720	2871	2562	2720	2877
Muzzle Energy, total ft.-tons	620	703	795	1836	2065	2307	2736	3082	3429	5228	5905	6583	14425	16232	18168	21815	24557	27430	31690	39047	43564	44855	50341	56473
Perforation through Steel, in ins.	7·52	8·23	8·98	11·40	12·40	13·40	13·15	14·29	15·43	16·42	17·91	19·37	23·62	25·76	27·91	27·54	29·98	32·43	32·48	35·37	38·31	35·63	38·71	42·01
Perforation through Iron, Tresidder's formula	10·5	11·3	12·0	16·46	17·97	19·50	18·76	20·49	22·21	23·05	25·24	27·42	32·34	35·42	38·53	37·29	40·76	44·27	43·51	47·56	51·73	47·39	51·72	56·35
Perforation Krupp Steel, 3000 yards	..	..	..	..	..	..	3·55	3·83	4·08	5·05	5·40	5·76	8·25	8·81	9·37	10·00	10·66	11·32	12·30	13·11	13·92	13·78	14·66	15·60

BETHLEHEM STEEL CO.

ORDNANCE.

This Table is supplied by the Manufacturers.

Calibre.	Length of bore.	Calibre.	Weight of gun.	Weight of projectile.	Muzzle velocity.	Muzzle energy.	Perforation of wrought iron.*	Perforation (3000 yds.) of K.C. armour by capped A.P. shell, normal impact.	Limit beyond which capped A.P. shell will not perforate K.C. plate.	
									12-in. plate.	7-in. plate.
inches.	cals.	cms.	lbs.	lbs.	feet per second.	foot-tons.	inches.	inches.	yards.	yards.
1·457	46	3·7	120	1	2300	37	3·5	..	..	..
1·851	46	4·7	550	3	2600	142	6·4	..	..	..
2·244	50	5·7	960	6	2400	240	7·3	..	..	..
3	50	7·62	1900	13	2800	707	11·7	..	..	..
			tons.							
4	40	10·16	1·6	33	2250	1,159	11·6	..	..	..
4	50	10·16	2·6	33	2900	1,924	17·0	..	..	..
4·724	50	12·0	4·2	45	2900	2,623	18·3	..	..	..
5	45	12·7	3·4	60	2500	2,599	16·5	3·9	..	..
5	50	12·7	4·75	60	2900	3,490	20·5	4·6	..	..
6	45	15·24	7·2	105	2600	4,967	21·2	5·7	..	1,820
6	50	15·24	8·4	105	2900	6,180	24·9	6·5	..	2,630
7	45	17·78	12·7	165	2800	8,967	27·3	8·1	..	4,010
7	50	17·78	14·5	165	2900	9,619	28·8	8·5	..	4,310
8	45	20·32	18·6	250	2800	13,587	31·5	10·3	1,780	6,070
10	45	25·4	35·4	500	2800	27,174	39·8	15	5,280	11,100
12	45	30·48	53·0	850	2800	46,195	47·4	19·5	8,870	Max. Range
18	28	45·72	60·0	2000	2250	70,185	42·7	19·9	9,500	Max. Range

* By Tresidder's Formula.

Table Relating to Conversion of Measures.

Length.

Metric to English. **English to Metric.**

I. Mètres.	II. Yards.	III. Feet.	IV. Inches.	V. Yards.	VI. Mètres.	VII. Feet.	VIII. Mètres.	IX. Inches.	X. Centimètres.
1	1·0936	3·2809	39·37	1	0·91438	1	0·30479	1	2·5400
2	2·1873	6·5618	78·74	2	1·82877	2	0·60959	2	5·0799
3	3·2809	9·8427	118·11	3	2·74315	3	0·91438	3	7·6199
4	4·3745	13·1236	157·48	4	3·65753	4	1·21918	4	10·1598
5	5·4682	16·4045	196·85	5	4·57192	5	1·52397	5	12·6998
6	6·5618	19·6854	236·22	6	5·48630	6	1·82877	6	15·2397
7	7·6554	22·9663	275·60	7	6·40068	7	2·13356	7	17·7797
8	8·7491	26·2472	314·97	8	7·31507	8	2·43836	8	20·3196
9	9·8427	29·5281	354·34	9	8·22945	9	2·74315	9	22·8596

Explanation.—To convert any number from one measure to the other, take the values of the different multiples of 10 by shifting the position of the decimal point, and add together. Thus, find the number

of yards in 2354 mètres (see cols. I. & II.).	of feet in 12·4 mètres (see cols. I. & III.).	of inches in 30·5 centimètres (see cols. I. & IV.).	of mètres in 1026 yards (see cols. V. & VI.).	of mètres in 1742 feet (see cols. VII. & VIII.).	of centimètres in 17·72 ins. (see cols. IX. & X.)
		Note, 1 m.=100 cm.			
mètres. yards.	mètres. feet.	cms. inches.	yards. mètres.	feet. mètres.	inches. cms.
2000=2187·3	10 =32·809	30·0=11·811	1000=914·38	1000=304·79	10·0 =25·400
300= 328·09	2 = 6·562	·5= ·197	20= 18·29	700=213·36	7·0 =17·780
50= 54·68	0·4= 1·312		6= 5·49	40= 12·19	0·7 = 1·778
4= 4·37				2= 0·61	·02= ·051
∴ 2354=2574·44	∴ 12·4=40·683	∴ 30·5=12·008	∴ 1026=938·16	∴ 1742=530·95	∴ 17·72=45·009

Note.—A ready way of approximately converting all French measures into English inches is to multiply by 4 and apply the decimal point by common sense—Thus for a 15-cm. gun; 15 × 4 = 60. Now this Calibre cannot be 60 inches, nor can it be 0·6 inch; therefore it must be 6 inches. (The exact value is 5·906 in.)

Weight.

Metric to English. **English to Metric.**

I. Kilogrammes.	II. Tons.	III. Pounds Avoirdupois.	IV. Grains Troy.	V. Tons.	VI. Milliers.	VII. Pounds Avoirdupois.	VIII. Kilogrammes.	IX. Grains. Troy.	X. Gramme.
1	·000984	2·2046	15432·3	1	1·016	1	0·4536	1	·0648
2	·001968	4·4092	30864·7	2	2·032	2	0·9072	2	·1296
3	·002953	6·6139	46297·0	3	3·048	3	1·3608	3	·1944
4	·003937	8·8185	61729·4	4	4·064	4	1·8144	4	·2592
5	·004921	11·0231	77161·7	5	5·080	5	2·2680	5	·3240
6	·005905	13·2277	92594·1	6	6·096	6	2·7216	6	·3888
7	·006889	15·4323	108026·4	7	7·112	7	3·1751	7	·4536
8.	·007874	17·6370	123458·8	8	8·128	8	3·6287	8	·5184
9	·008858	19·8416	138891·1	9	9·144	9	4·0823	9	·5832

Explanation.—To convert any number from one measure to the other, take the values of the different multiples of 10 by shifting the position of the decimal point, and add together. Thus, find the number

of tons in 35 milliers (see cols. I. & II. Note, 1000 kg. =1 millier).	of pounds in 56·3 kilogrammes. (see cols. I. & III.).	of grains in 120 grammes (see cols. I. & IV. Note, 1000 grms. = 1 kg.)	of milliers in 38 tons (see cols. V. & VI.).	of kilogrammes in 68 pounds (see cols. VII. & VIII).	of grammes in 85 grains (see cols. IX. & X.).
milliers. tons.	kgrms. lbs.	grammes. grains.	tons. milliers.	lbs. kgs.	grains. grammes.
30 = 29·53	50 =110·231	100=1543·23	30 = 30·48	60 = 27·216	80 = 5·184
5 = 4·92	6 = 13·228	20= 308·65	8 = 8·13	8 = 3·629	5 = 0·324
	0·3= ·661				
∴ 35 = 34·45	∴ 56·3=124·120	∴ 120=1851·88	∴ 38 = 38·61	∴ 68 = 30·845	∴ 85 = 5·508

Note.—7000 grains troy = 1 pound avoirdupois.

PRESSURE.

Metric to English.			English to Metric.				Atmospheric to English.		English to Atmospheric.	
I. Kilogrammes per square centimètre.	II. Pounds per square inch.	III. Tons per square inch.	IV. Pounds per square inch.	V. Kilogrammes per square centimètre.	VI. Tons per square inch.	VII. Kilogrammes per square centimètre.	VIII. Atmospheres.	IX. Tons per square inch.	X. Tons per square inch.	XI. Atmospheres.
1	14·223	·00635	1	·07031	1	157·49	1	·00656	1	152·38
2	28·446	·01279	2	·14062	2	314·99	2	·01313	2	304·76
3	42·668	·01905	3	·21003	3	472·48	3	·01969	3	457·14
4	56·891	·02540	4	·28124	4	629·97	4	·02625	4	609·52
5	71·114	·03175	5	·35155	5	787·47	5	·03281	5	761·91
6	85·337	·03810	6	·42186	6	944·96	6	·03938	6	914·29
7	99·560	·04445	7	·49217	7	1102·45	7	·04594	7	1066·67
8	113·783	·05080	8	·56248	8	1259·95	8	·05250	8	1219·05
9	128·005	·05715	9	·63279	9	1417·44	9	·05906	9	1371·43

Note.—One atmosphere is taken to be 14·7 lbs. per square inch.

Explanation.—To convert any number from one measure to the other, take the value of the different multiples of 10 by shifting the position of the decimal point, and add together. Thus, find the number

of pounds per square inch in 32·1 kilogrammes per square centimètre (see cols. I. & II.).
kgs. per sq. cm. — lbs. per sq. in.
30 = 426·68
2 = 28·45
0·1 = 1·42
32·1 = 456·55

of tons per square inch in 3210 kilogrammes per square centimètre (see cols. I. & III.).
kgs. per sq. cm. — tons per sq. in.
3000 = 19·05
200 = 1·27
10 = ·06
∴ 3210 = 20·38

of kilogrammes per square centimètre in 15 lbs. per square inch (see cols. IV. & V.).
lbs. per sq. in. — kgs. per sq. cm.
10 = ·7031
5 = ·3516
∴ 15 = 1·0517

of kilogrammes per square centimètre in 18·3 tons per square inch (see cols. VI. & VII.).
tons per sq. in. — kgs. per sq. cm.
10 = 1574·9
8 = 1259·95
0·3 = 47·25
∴ 18·3 = 2882·10

of tons per square inch in 3254 atmospheres. (see cols. VIII. & IX.).
atmospheres. — tons per sq. inch.
3000 = 19·69
200 = 1·31
50 = ·33
4 = ·03
∴ 3254 = 21·36

of atmosphere in 14·6 tons per square inch (see cols. X. & XI.).
tons per sq. in. — atmospheres.
10 = 1523·8
4 = 609·5
0·6 = 91·4
∴ 14·6 = 222·7

ENERGY.

Metric to English.		English to Metric.	
I. Mètre-tons.	II. Foot-tons.	III. Foot-tons.	IV. Mètre-tons.
1	3·2291	1	0·3097
2	6·4581	2	0·6194
3	9·6872	3	0·9291
4	12·9162	4	1·2388
5	16·1453	5	1·5484
6	19·3743	6	1·8581
7	22·6034	7	2·1678
8	25·8324	8	2·4775
9	29·0615	9	2·7872

1 mètre-ton is termed a "dinamode" in Italy.

Explanation.—To convert any number from one measure to the other, take the values of the different multiples of 10 by shifting the position of the decimal point, and add together. Thus find the number

of foot-tons in 4367 mètre-tons (see cols. I. & II.).
mètre-tons. — foot-tons.
4000 = 12916·2
300 = 968·72
60 = 193·74
7 = 22·60
∴ 4367 = 14101·26

of mètre-tons in 3592 foot-tons (see cols. III. & IV.).
foot-tons. — mètre-tons.
3000 = 929·1
500 = 154·84
90 = 27·87
2 = ·62
∴ 3592 = 1112·43

PERFORATION THROUGH IRON AND STEEL WITH THE FACE NOT HARDENED.

To obtain perforation through steel equivalent to a given perforation through iron, and *vice versa*.

1 inch steel = 1¼ inches iron;

that is, 4 inches steel = 5 inches iron.

Thus, given 9·4 inches perforation through iron,

$$9{\cdot}4 \times \frac{4}{5} = 7{\cdot}52 \text{ inches steel;}$$

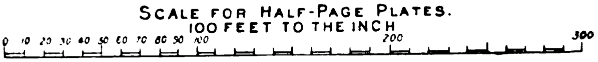
or, given 5·2 inches steel,

$$5{\cdot}2 \times \frac{5}{4} = 6{\cdot}5 \text{ inches iron.}$$

PLANS

OF

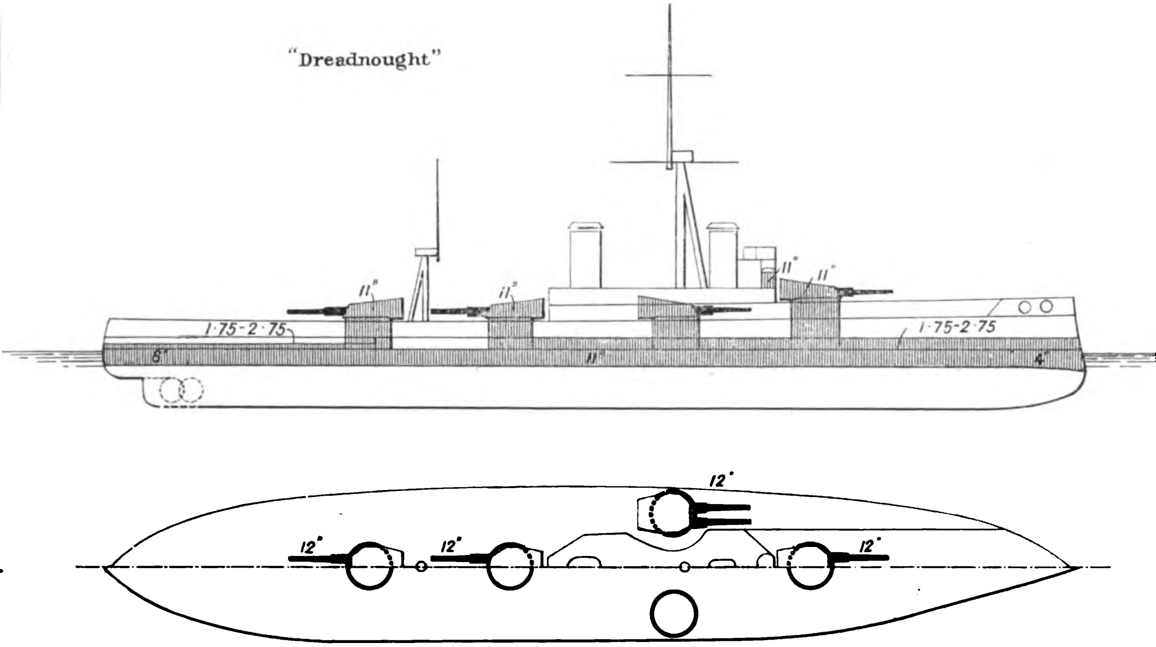
BRITISH AND FOREIGN SHIPS.



GREAT BRITAIN.

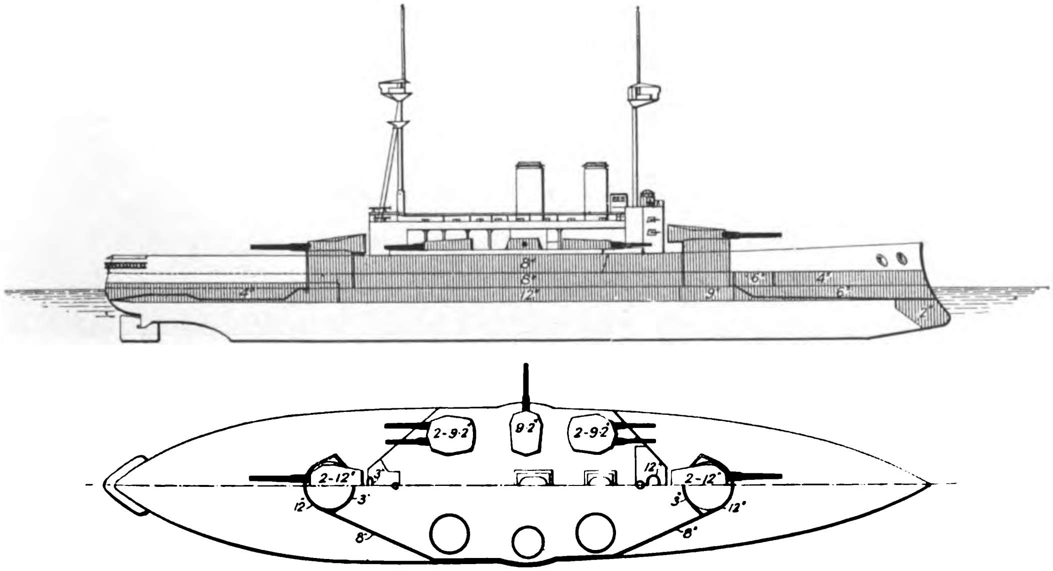
BATTLESHIPS.

"Dreadnought"



See page 194.

"Lord Nelson"
"Agamemnon"



See page 197.

PLATE 1.

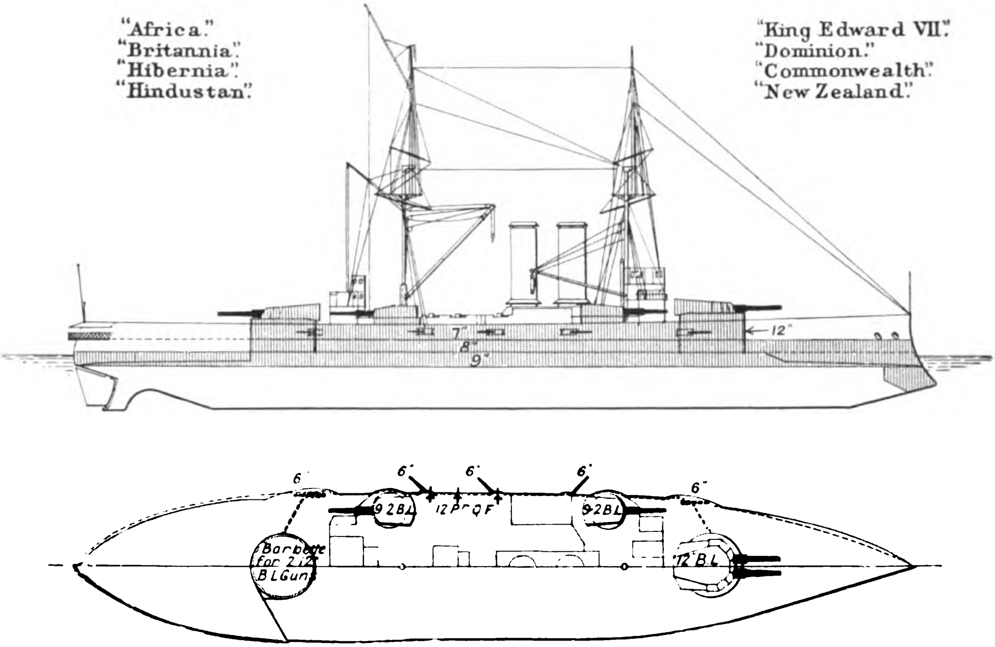
b 2

GREAT BRITAIN.

BATTLESHIPS.

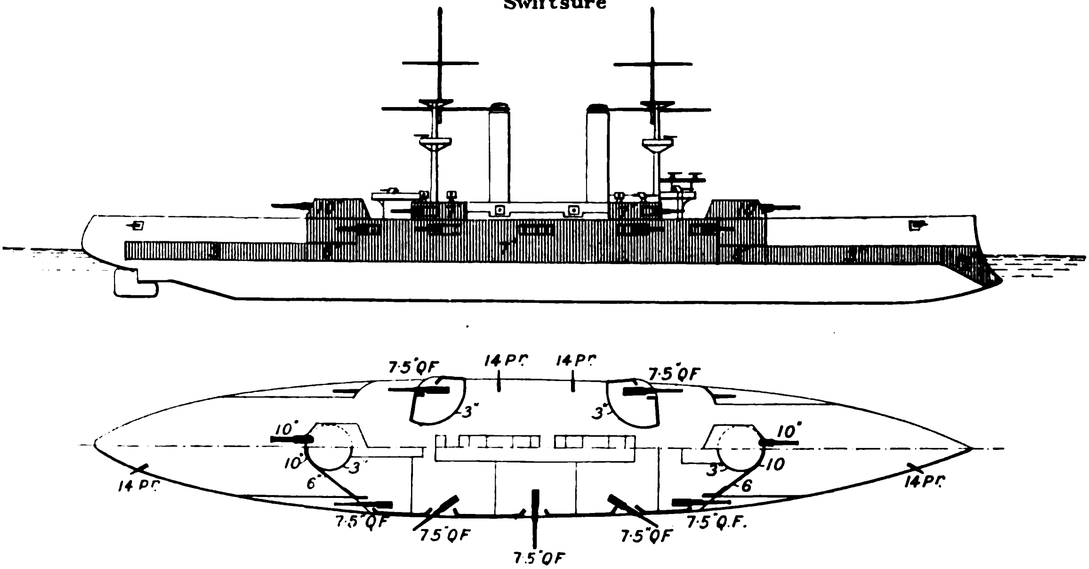
"Africa."
"Britannia."
"Hibernia."
"Hindustan."

"King Edward VII."
"Dominion."
"Commonwealth."
"New Zealand."



See page 192.

"Triumph"
"Swiftsure"



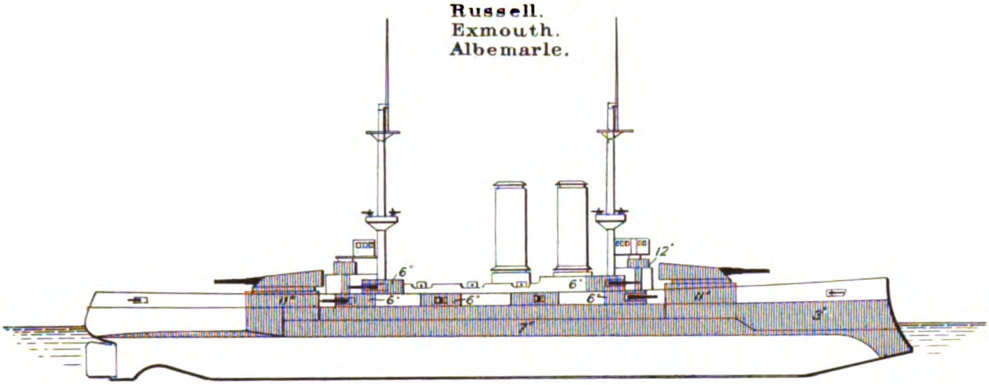
See page 199.

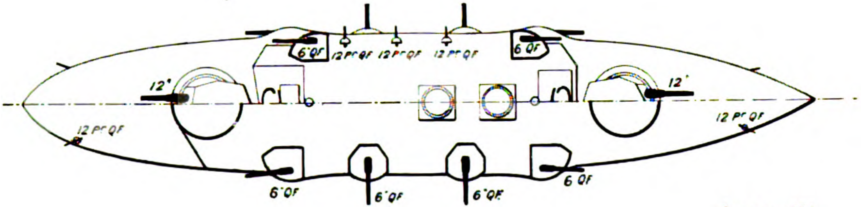
PLATE 2.

GREAT BRITAIN.

BATTLESHIPS.

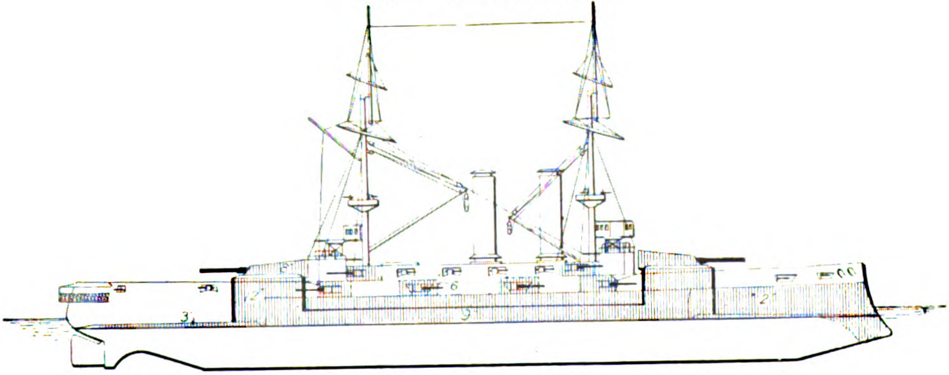
Duncan.
Cornwallis.
Russell.
Exmouth.
Albemarle.

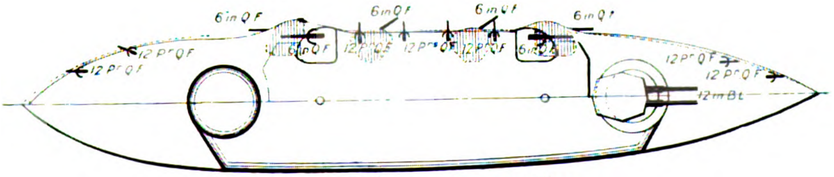




See page 194.

"Formidable". "Irresistible". "Implacable".
ˣ"Bulwark", ˣ"London". ˣ"Venerable"
ˣ"Queen" ˣ"Prince of Wales"





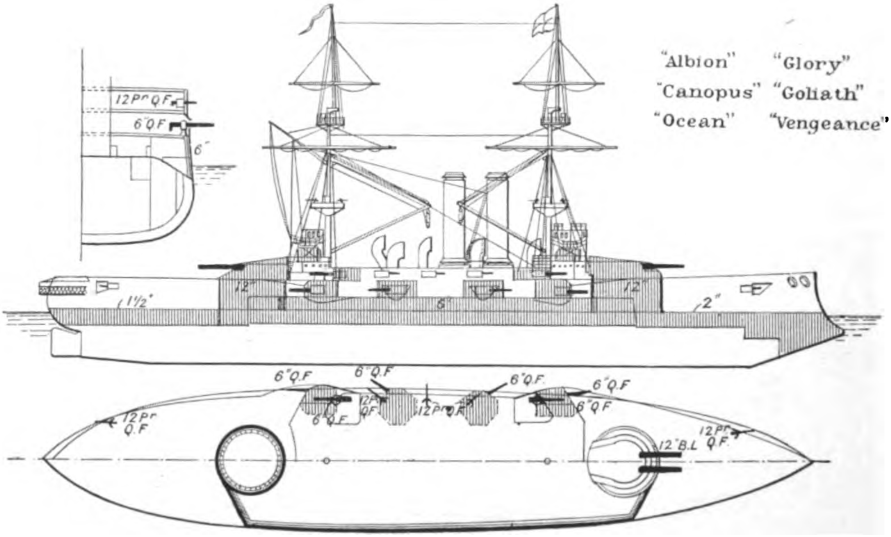
ˣIn These Ships 9" Armour Tapers to 2" at 30 ft From Bow, & They Have no Forward Bulkhead

See page 195.

PLATE 3.

GREAT BRITAIN.

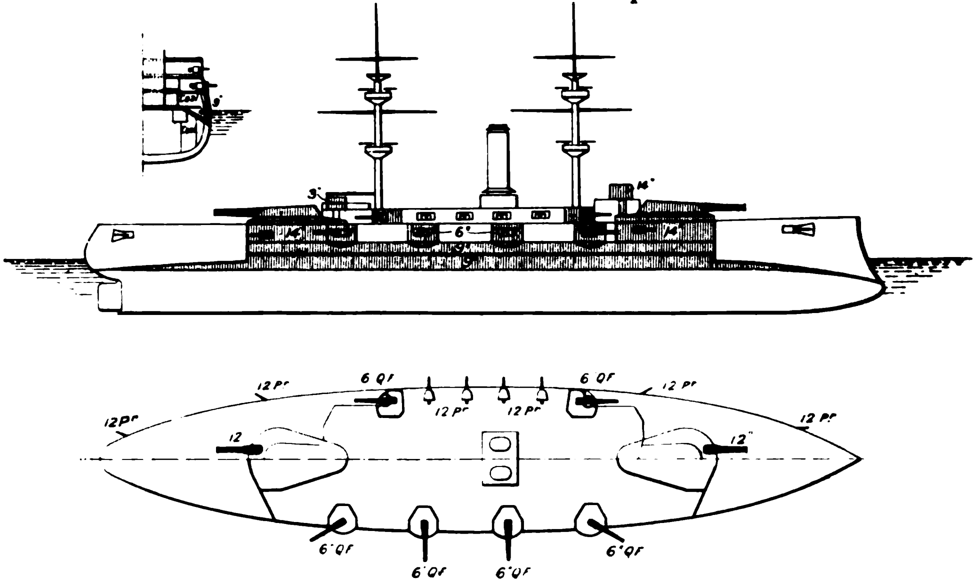
BATTLESHIPS.



"Albion" "Glory"
"Canopus" "Goliath"
"Ocean" "Vengeance"

See page 192.

Majestic. **Prince George.** **Illustrious.**
Magnificent. **Victorious.** **Cæsar.**
Hannibal **Mars.** **Jupiter.**



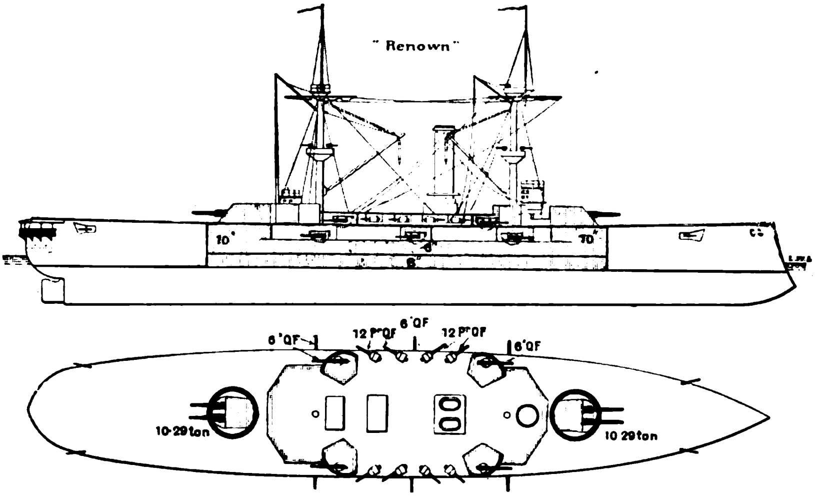
See page 197.

Plate 4.

GREAT BRITAIN.

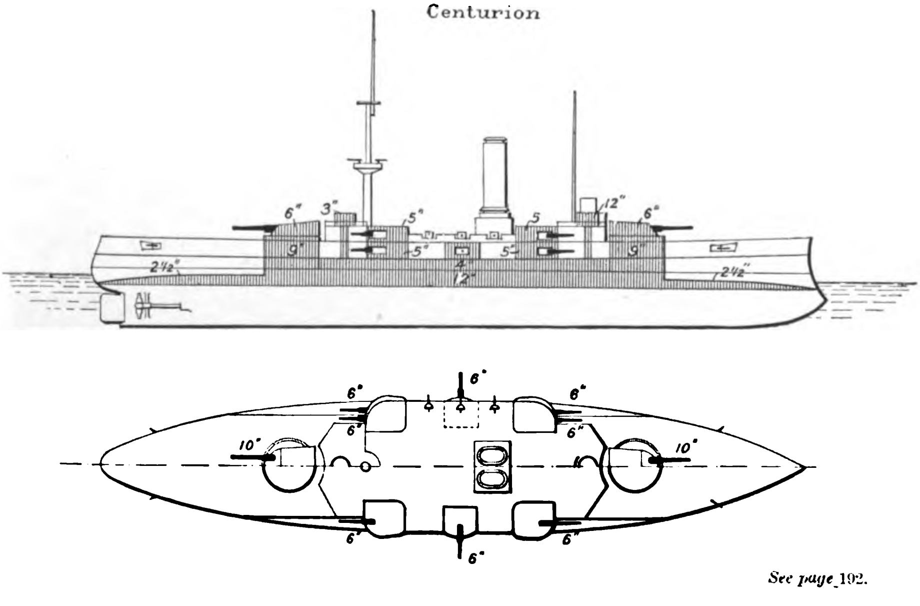
BATTLESHIPS.

"Renown"



See page 197.

Barfleur
Centurion



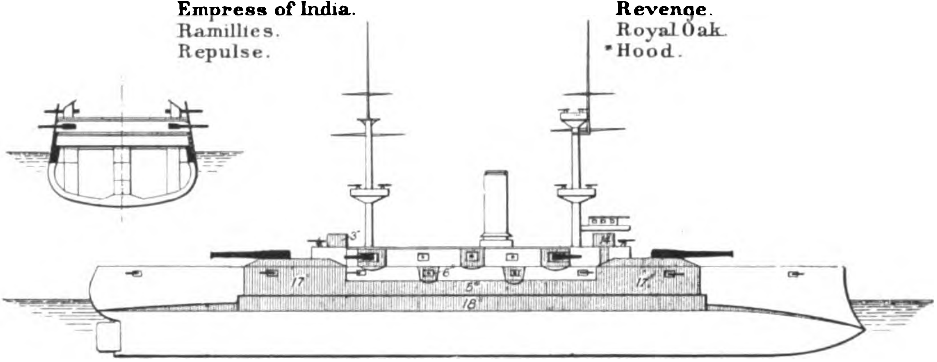
See page 192.

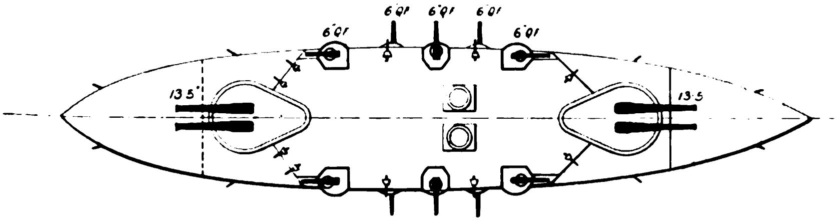
GREAT BRITAIN.

BATTLESHIPS.

Royal Sovereign.
Empress of India.
Ramillies.
Repulse.

Resolution.
Revenge.
Royal Oak.
*Hood.



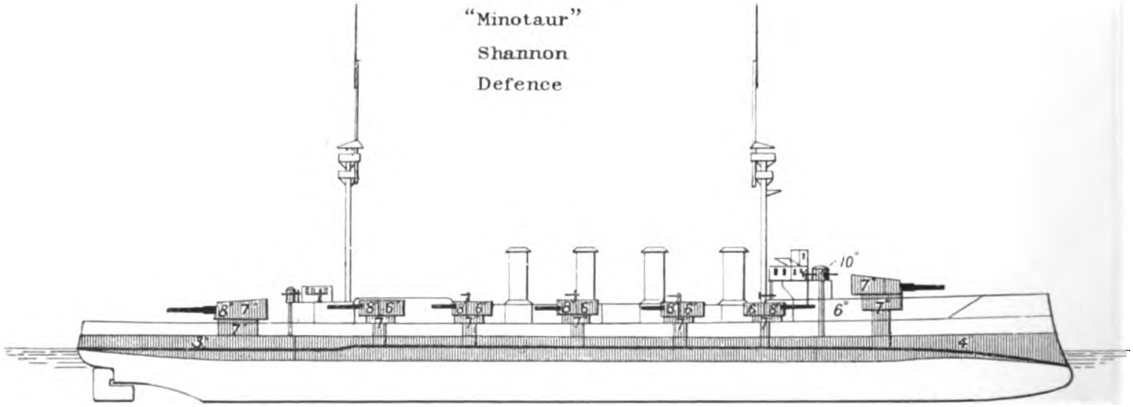


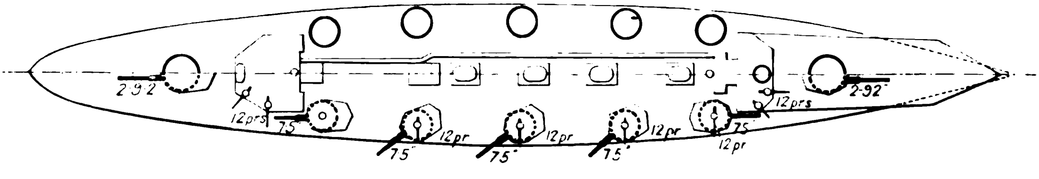
* *The 13.5" guns are in turrets on the "Hood"*

See page 198.

ARMOURED CRUISERS.

"Minotaur"
Shannon
Defence





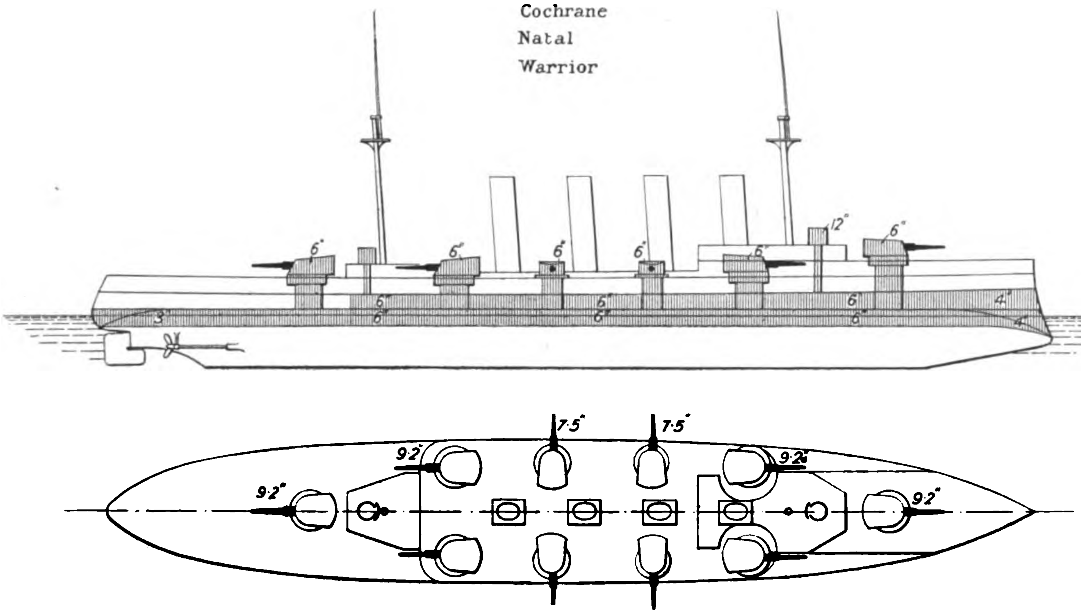
See page 197.

Plate 6.

GREAT BRITAIN.

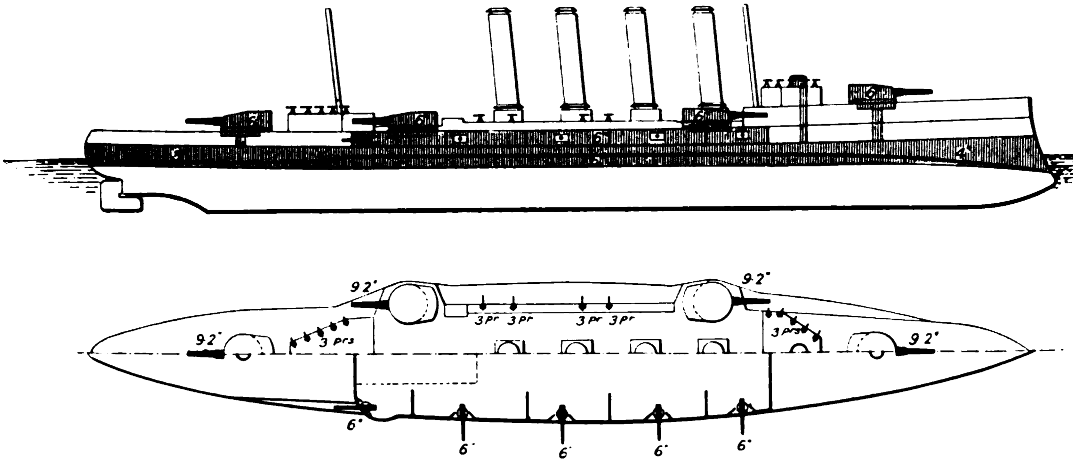
ARMOURED CRUISERS.

Achilles
Cochrane
Natal
Warrior



See page 192.

Duke of Edinburgh.
Black Prince.



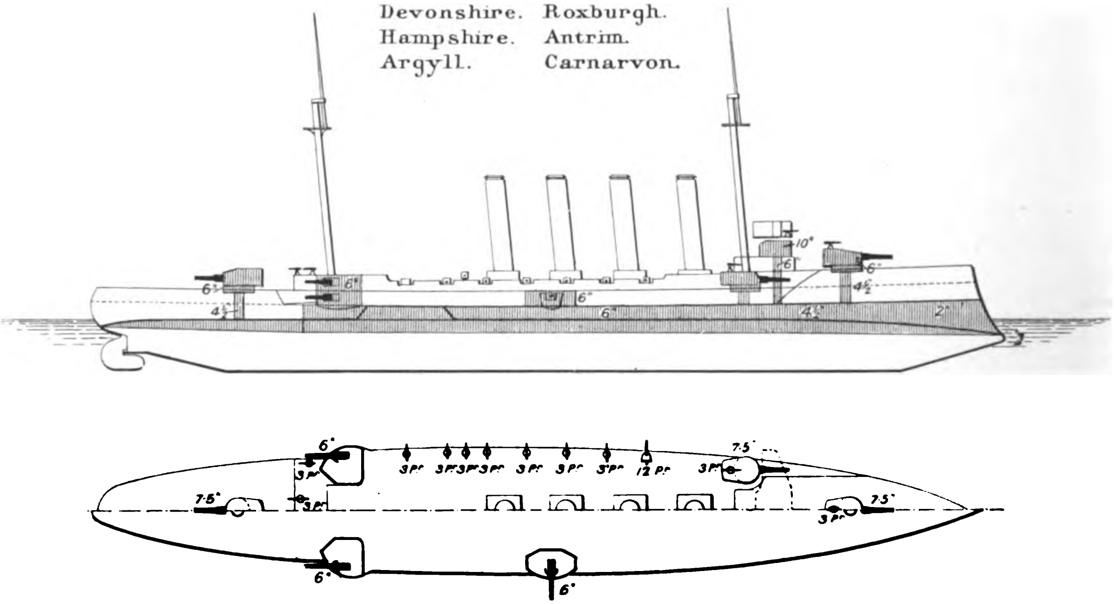
See page 194.

Plate 7.

GREAT BRITAIN.

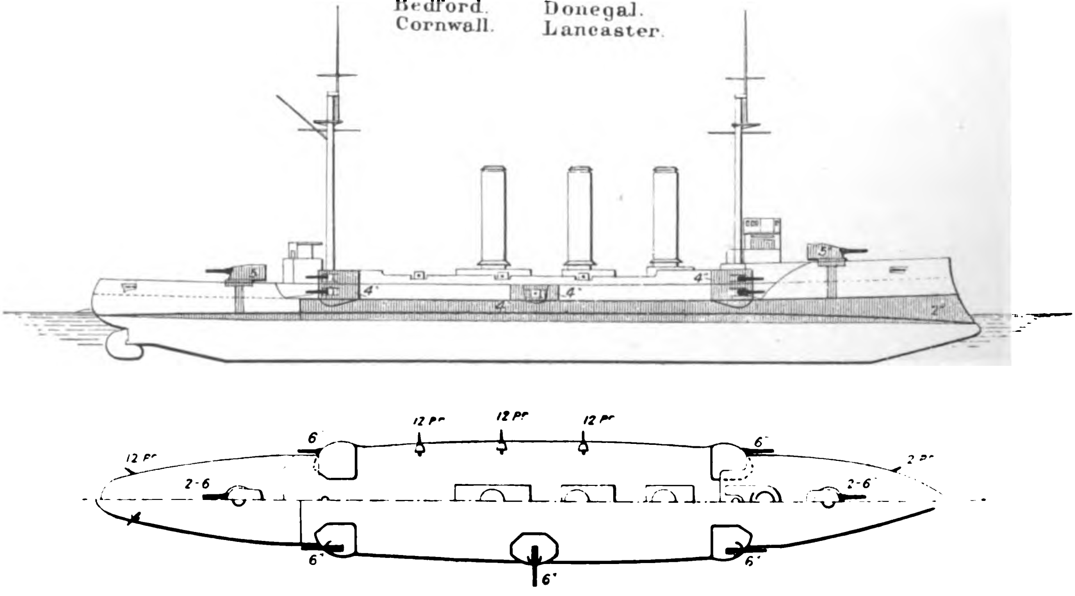
ARMOURED CRUISERS.

Devonshire. Roxburgh.
Hampshire. Antrim.
Argyll. Carnarvon.



See page 194.

Monmouth. Suffolk.
Kent. Berwick.
Essex Cumberland.
Bedford. Donegal.
Cornwall. Lancaster.

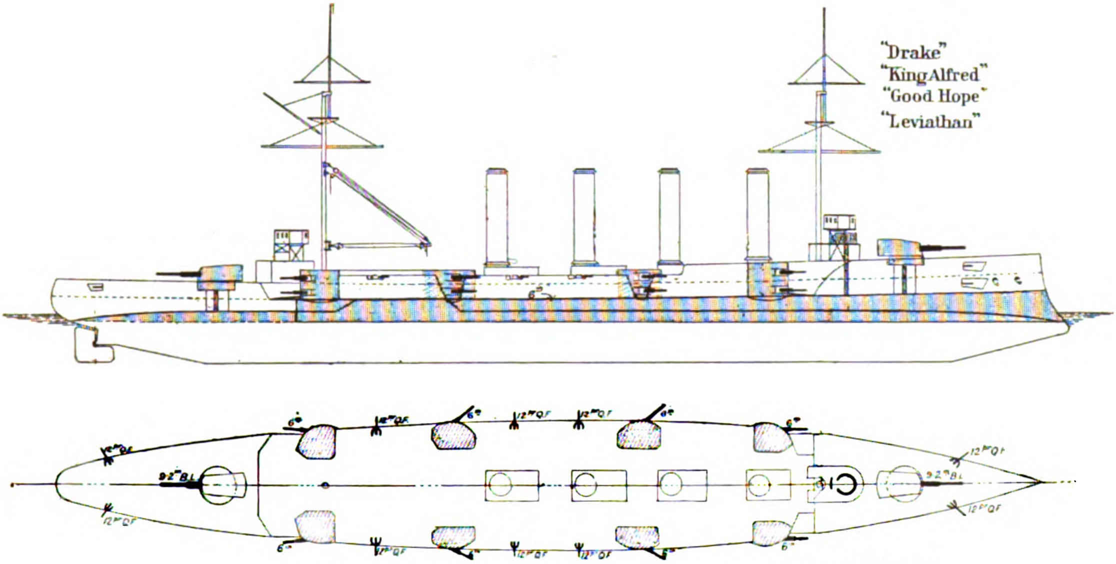


See page 197.

Plate 8.

GREAT BRITAIN.

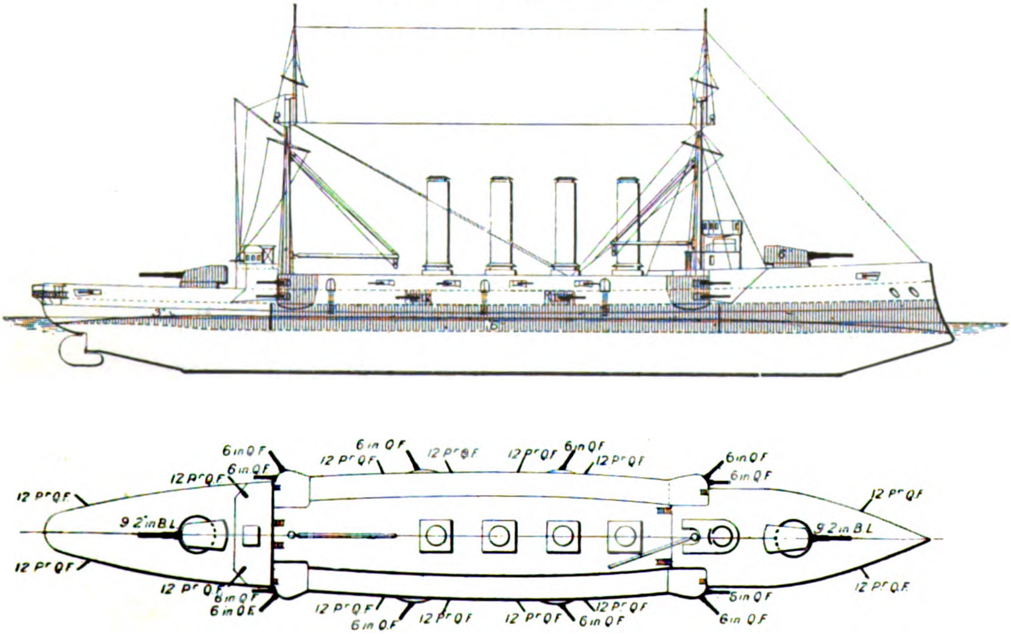
ARMOURED CRUISERS.



"Drake"
"King Alfred"
"Good Hope"
"Leviathan"

See page 194.

"Cressy", "Aboukir", "Hogue",
"Euryalus", "Sutlej", "Bacchante"



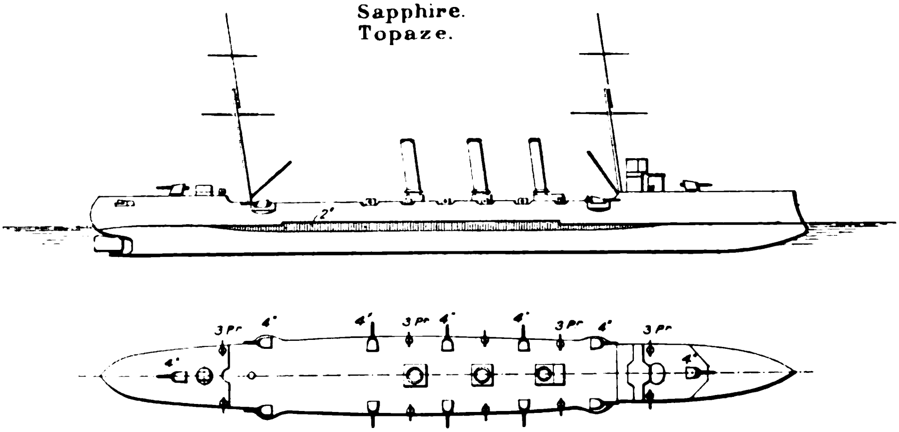
See page 194.

PLATE 9.

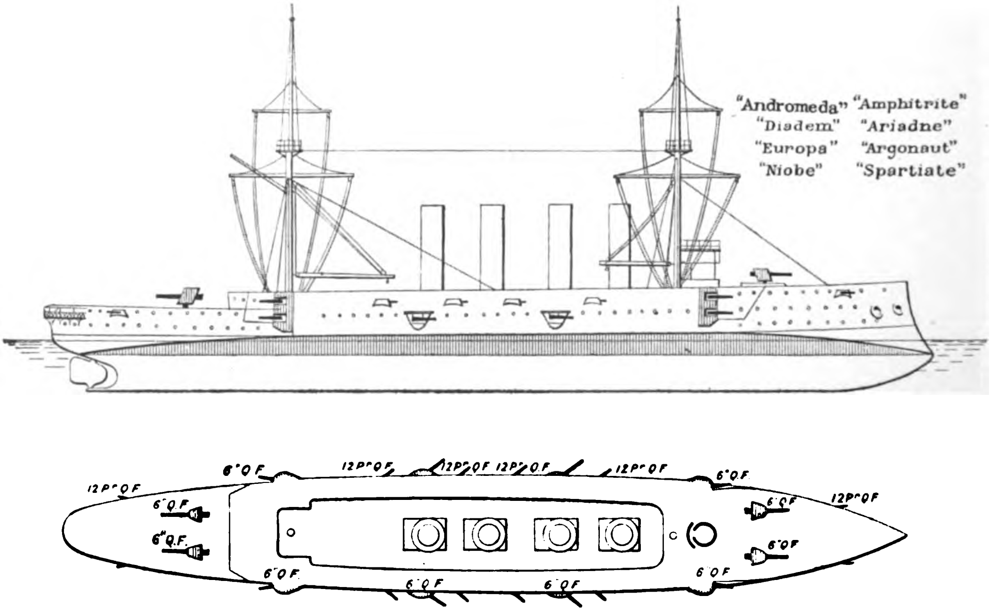
GREAT BRITAIN.

CRUISERS.

Amethyst.
Diamond.
Sapphire.
Topaze.



See page 200.



"Andromeda" "Amphitrite"
"Diadem" "Ariadne"
"Europa" "Argonaut"
"Niobe" "Spartiate"

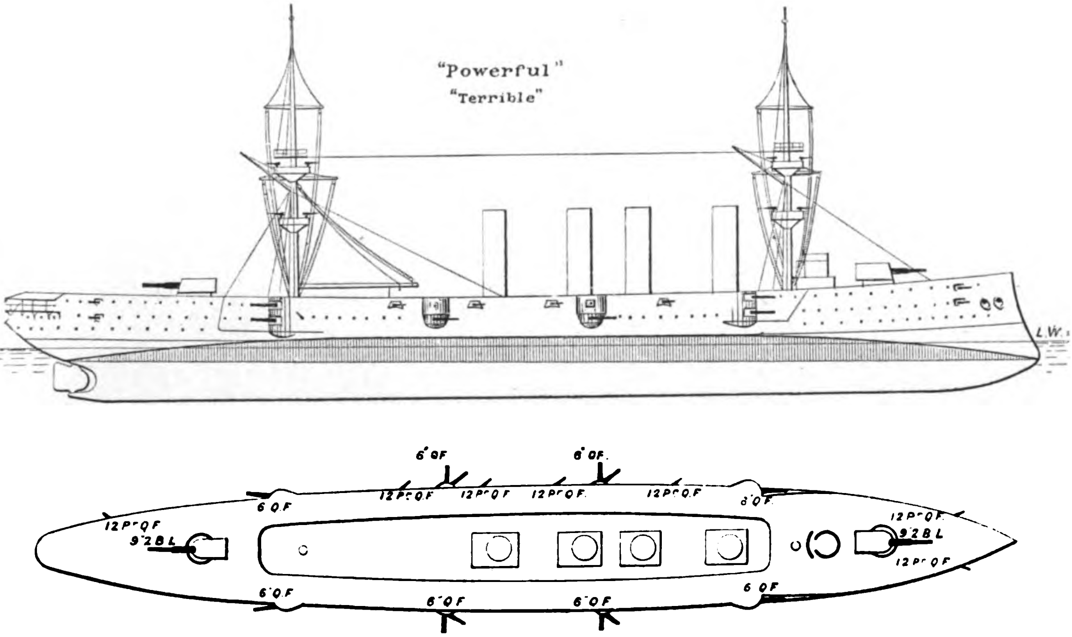
See page 200.

Plate 10.

GREAT BRITAIN.

CRUISERS.

"Powerful"
"Terrible"



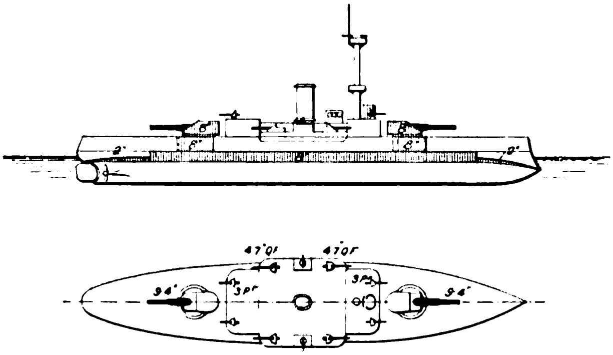
See page 205.

Plate 11.

ARGENTINA.

COAST DEFENCE SHIPS

Libertad.
Independencia.



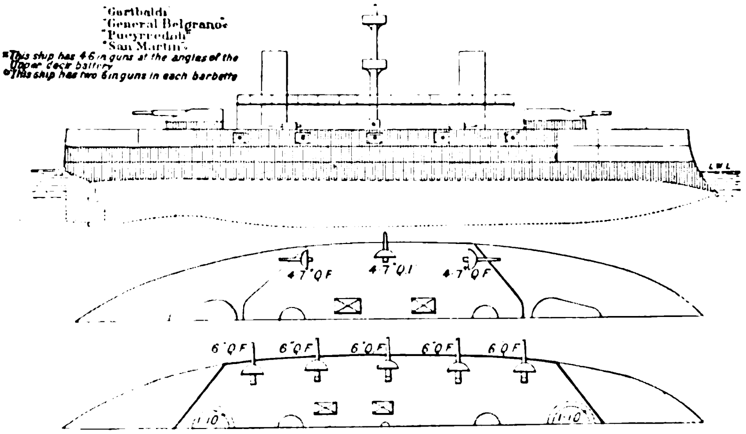
See page 208.

ARMOURED CRUISERS.

"Garibaldi."
"General Belgrano."°
"Pueyrredon"*
"San Martin."

*This ship has 4 6 in guns at the angles of the Upper deck battery

°This ship has two 8 in guns in each barbette



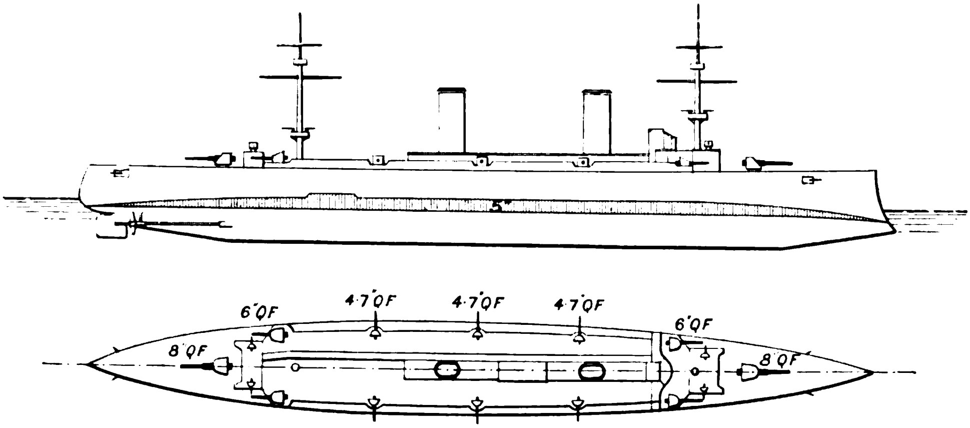
See page 208.

Plate 12.

ARGENTINA.

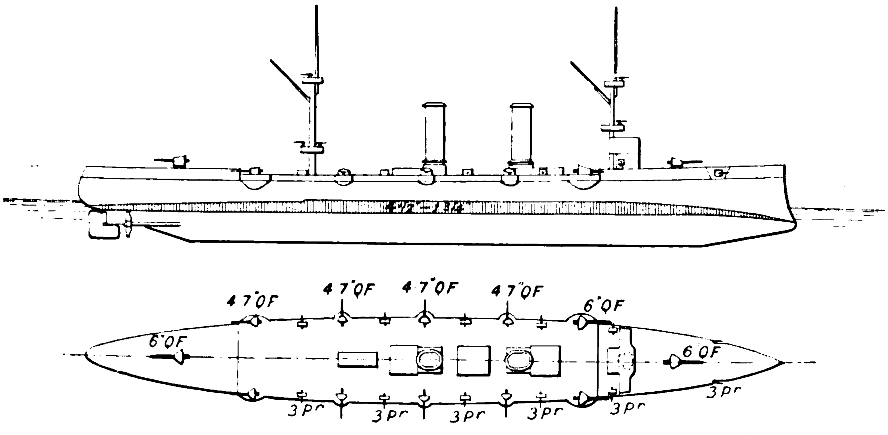
CRUISERS.

"Buenos Aires"



See page 209.

"Nueve de Julio"

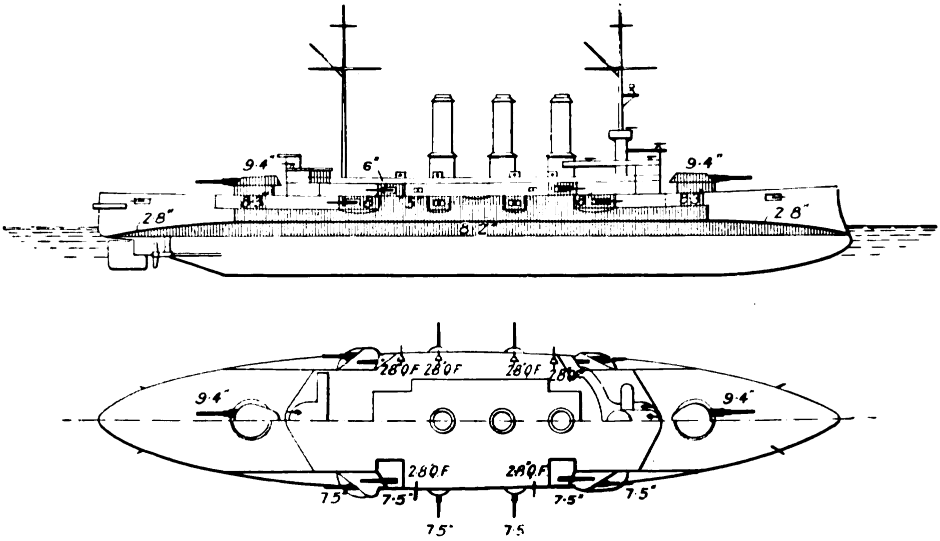


See page 209.

AUSTRIA.

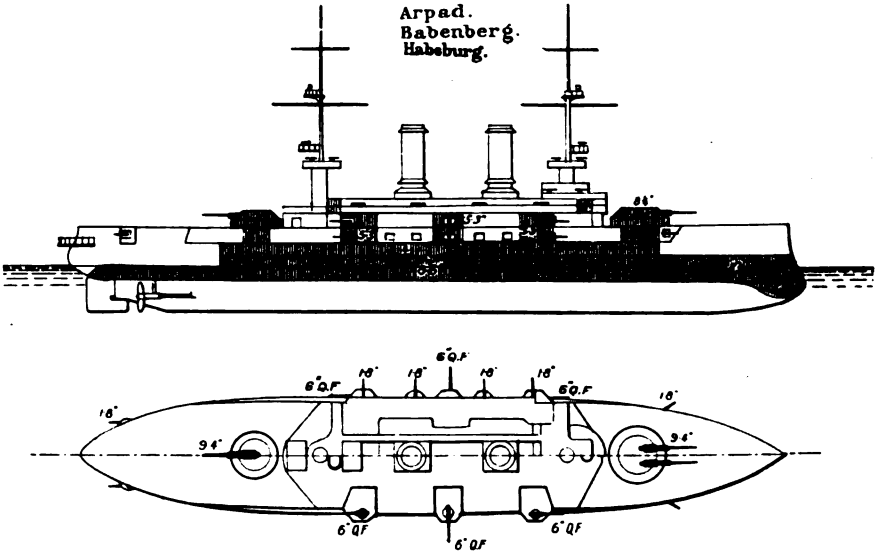
BATTLESHIPS.

Erzherzog Karl
"Erzherzog Friedrich"



See page 210.

Arpad.
Babenberg.
Habsburg.

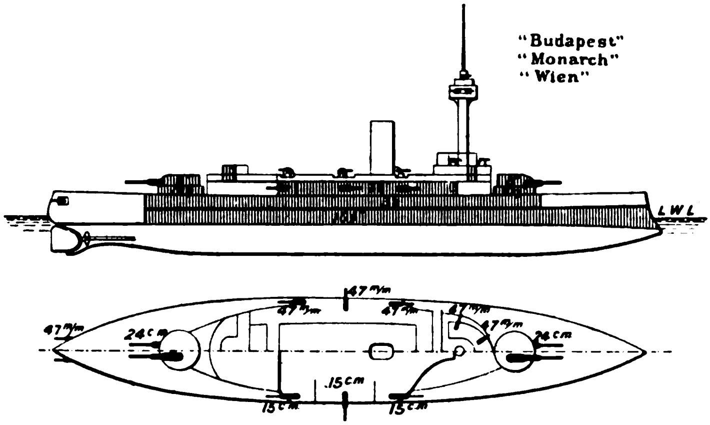


See page 210.

PLATE 14.

AUSTRIA.

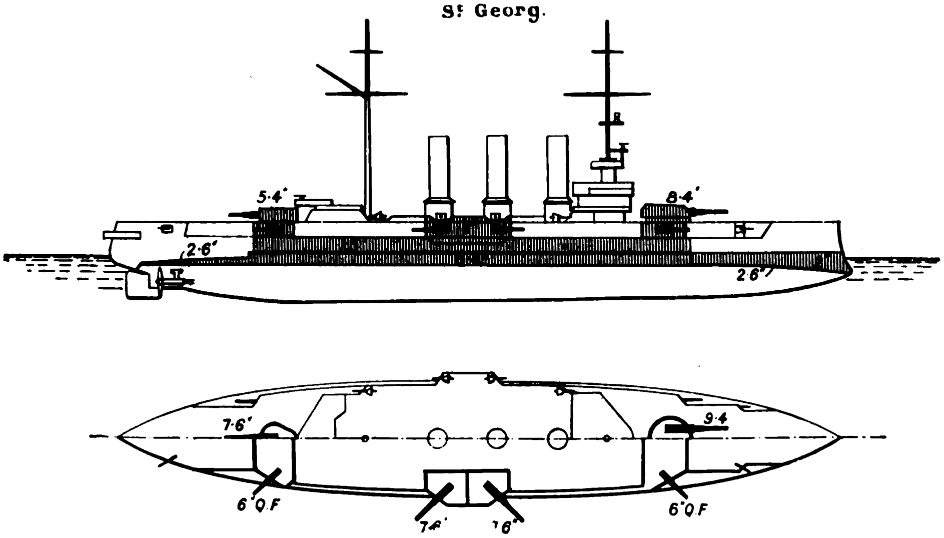
BATTLESHIPS.



See page 210.

ARMOURED CRUISER.

St Georg.



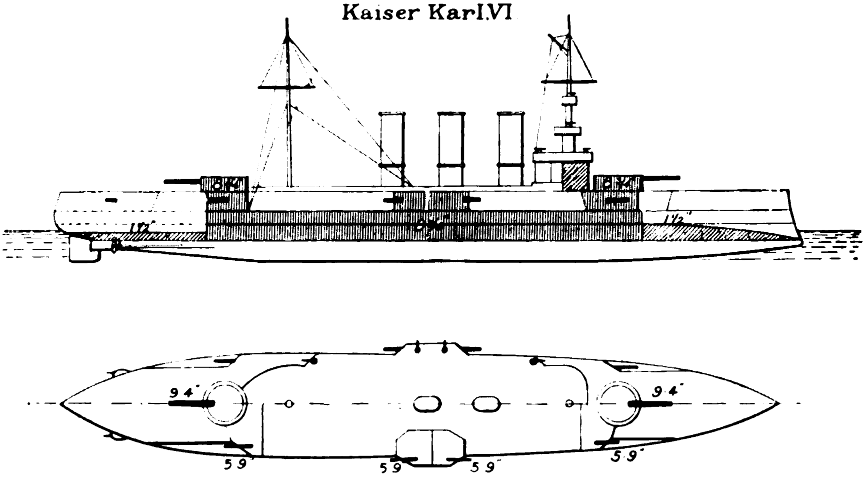
See page 210.

PLATE 15.

AUSTRIA.

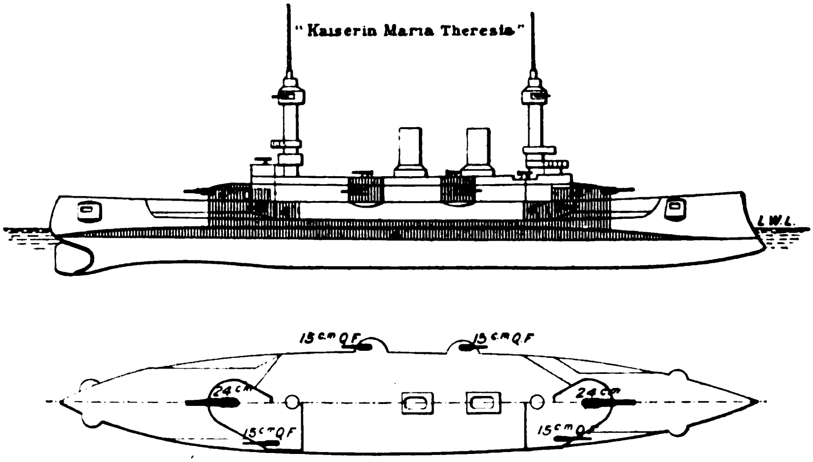
ARMOURED CRUISERS.

Kaiser Karl VI



See page 210.

"Kaiserin Maria Theresia"

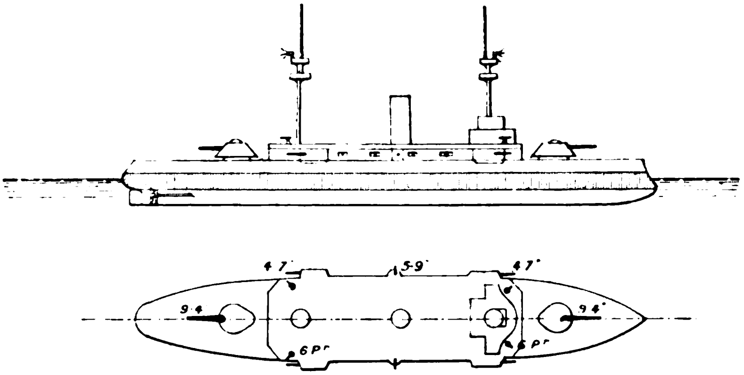


See page 210.

BRAZIL

COAST DEFENCE SHIPS.

Marshal Deodoro
Marshal Floriano.



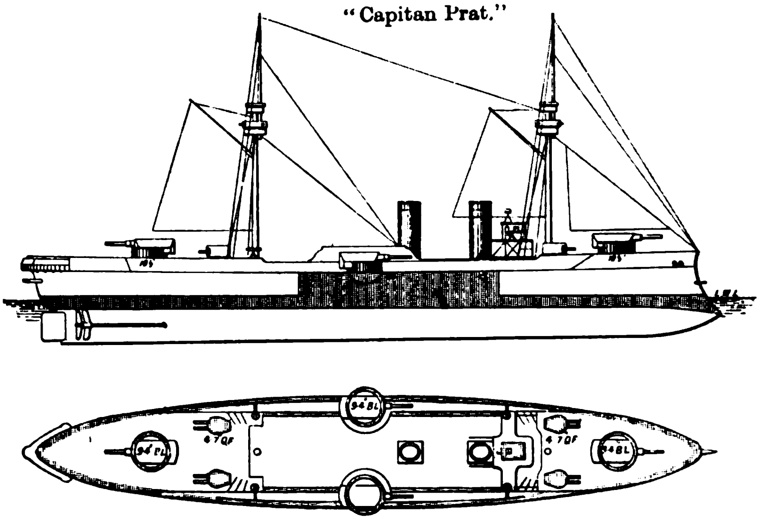
See page 212.

PLATE 17.

CHILI.

BATTLESHIP.

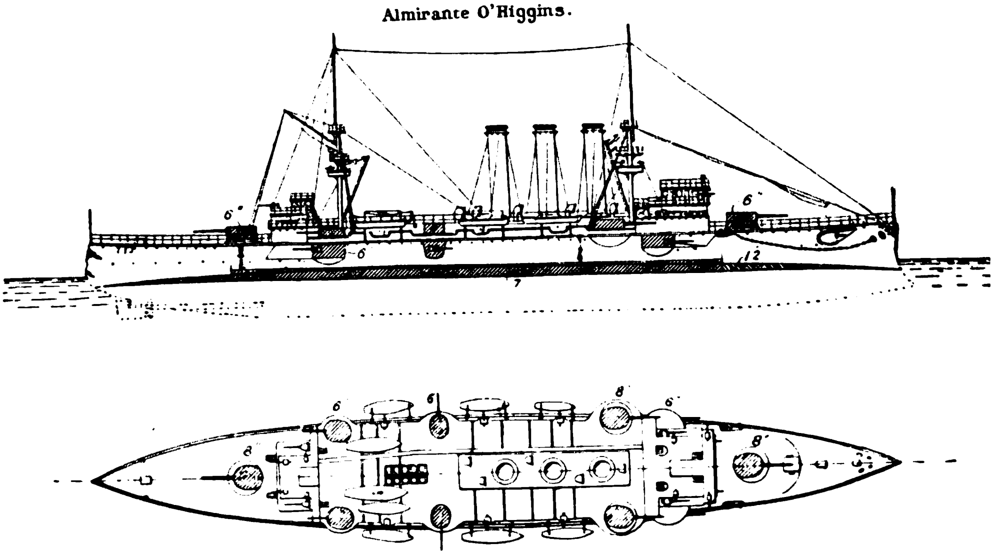
"Capitan Prat."



See page 214.

ARMOURED CRUISER.

Almirante O'Higgins.



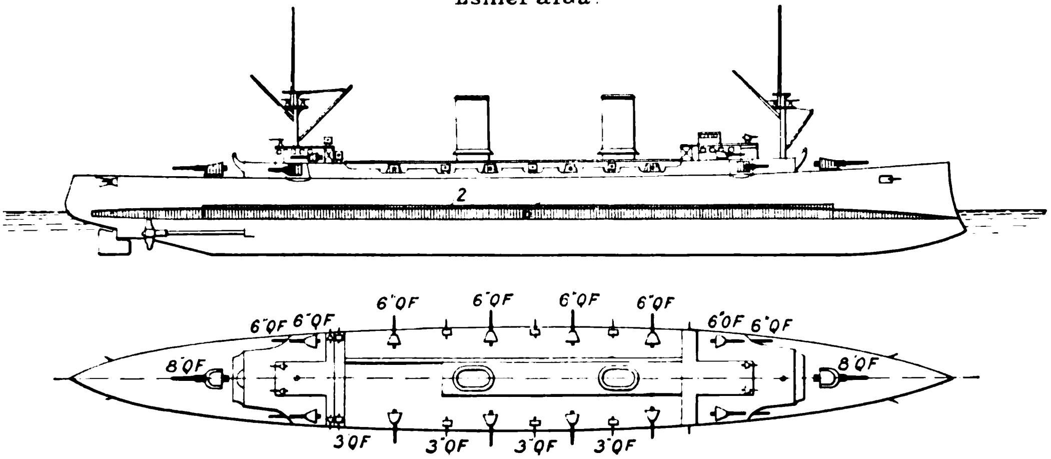
See page 214.

PLATE 18.

CHILI.

ARMOURED CRUISER.

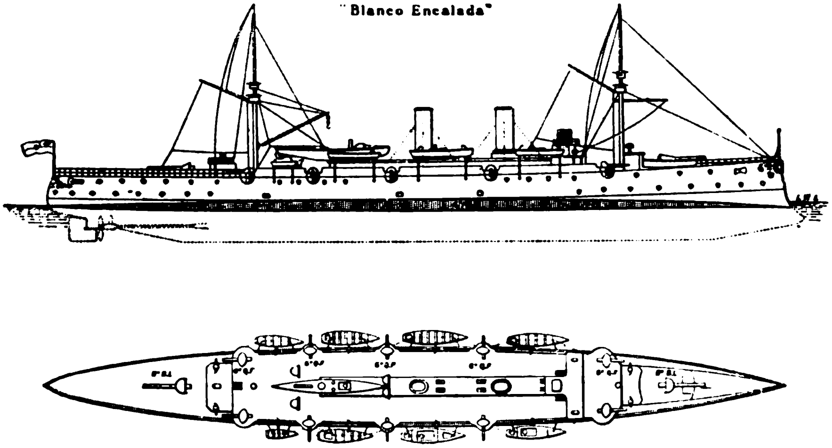
"Esmeralda"



See page 214.

CRUISER.

"Blanco Encalada"



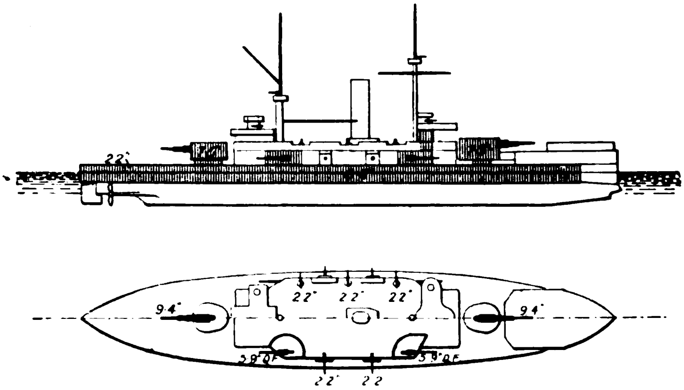
See page 214.

Plate 19.

DENMARK.

COAST DEFENCE SHIPS.

Herluf Trolle.
Olfert Fischer.
Peder Schram.

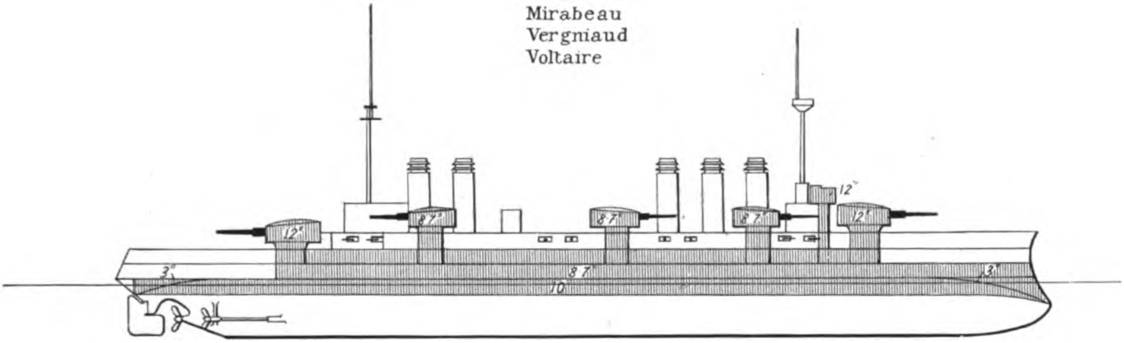


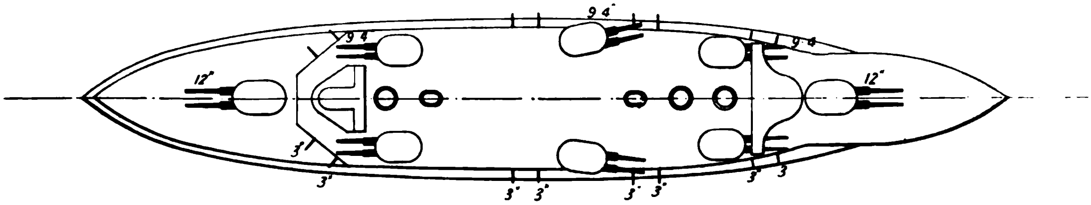
See page 216.

FRANCE.

BATTLESHIPS.

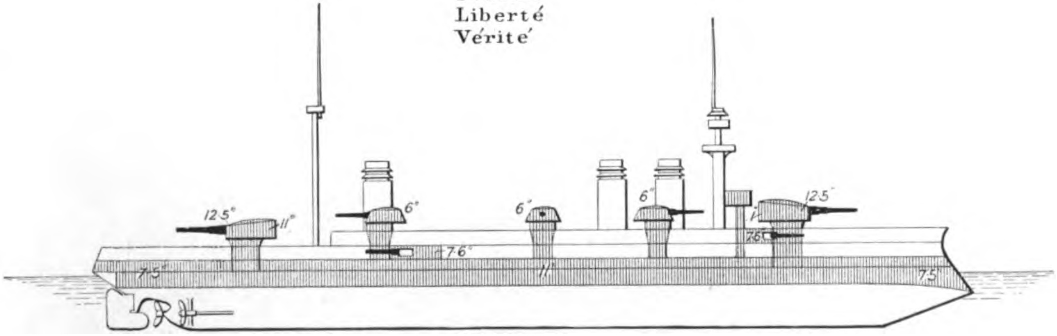
Condorcet
Danton
Diderot
Mirabeau
Vergniaud
Voltaire

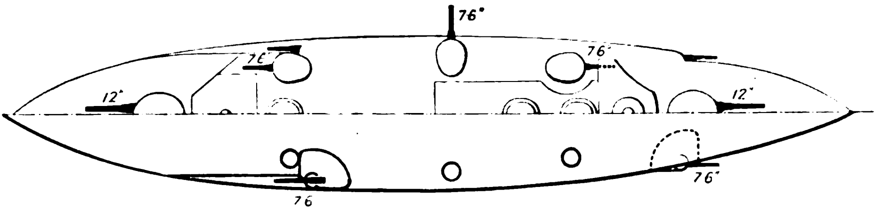




See page 218.

Démocratie
Justice
Liberté
Vérité





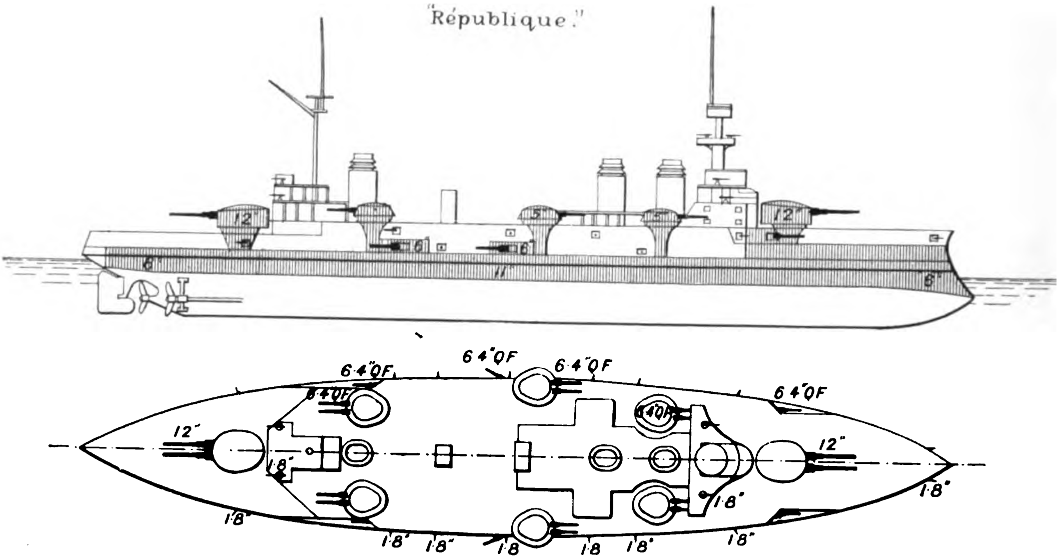
See page 218

PLATE 21.

FRANCE.

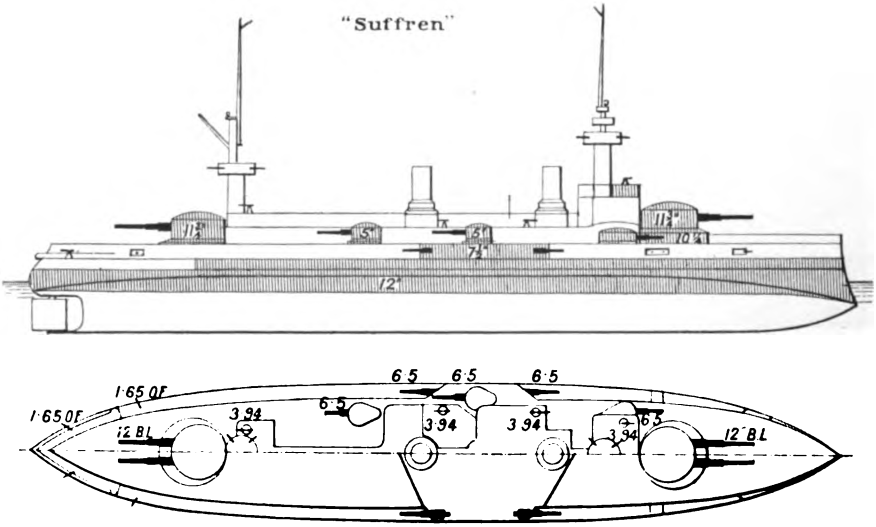
BATTLESHIPS.

"République."



See page 221.

"Suffren"



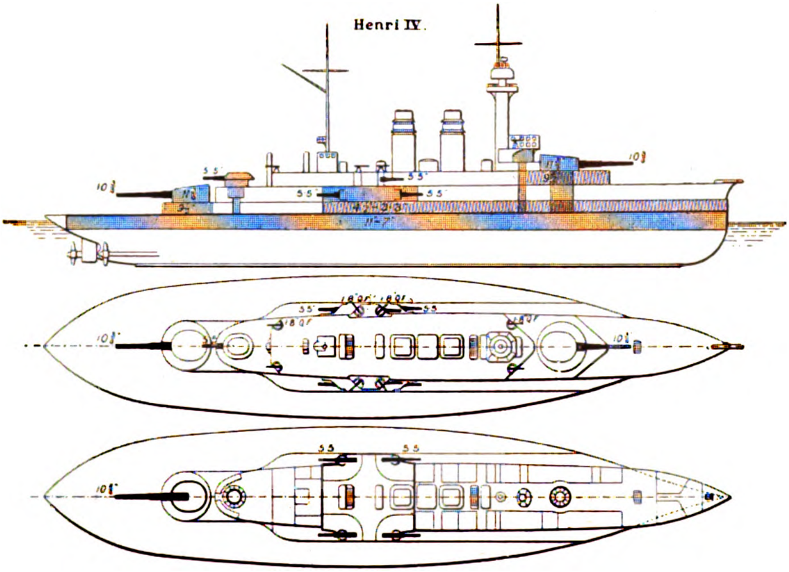
See page 221.

Plate 22.

FRANCE.

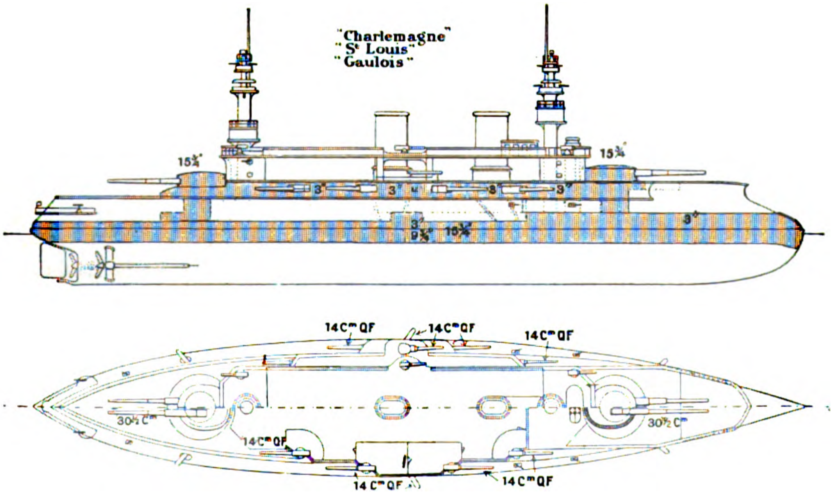
BATTLESHIPS.

Henri IV.



See page 219

"Charlemagne"
"Sᵗ Louis"
"Gaulois"



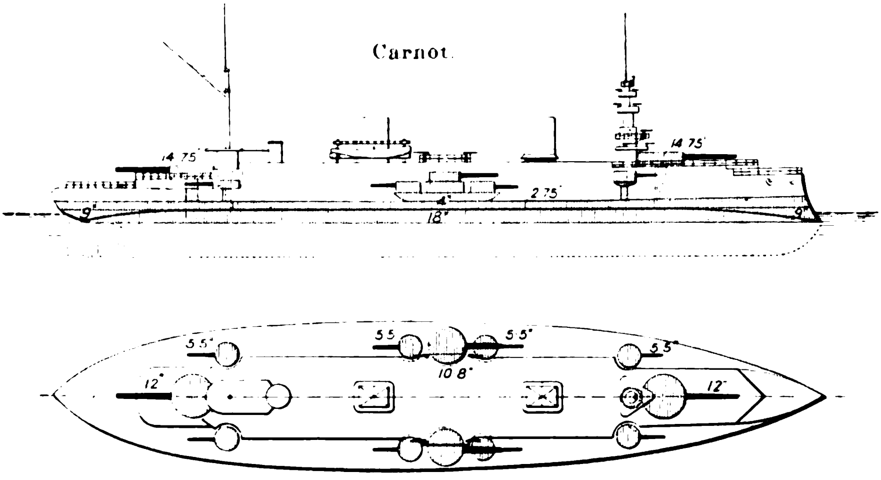
See page 217.

Plate 23.

FRANCE.

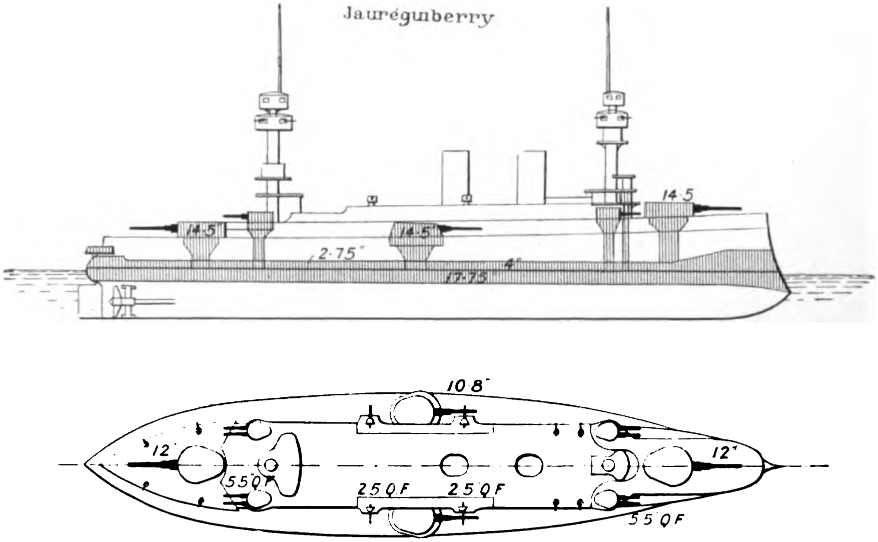
BATTLESHIPS.

Carnot.



See page 217.

Jauréguiberry

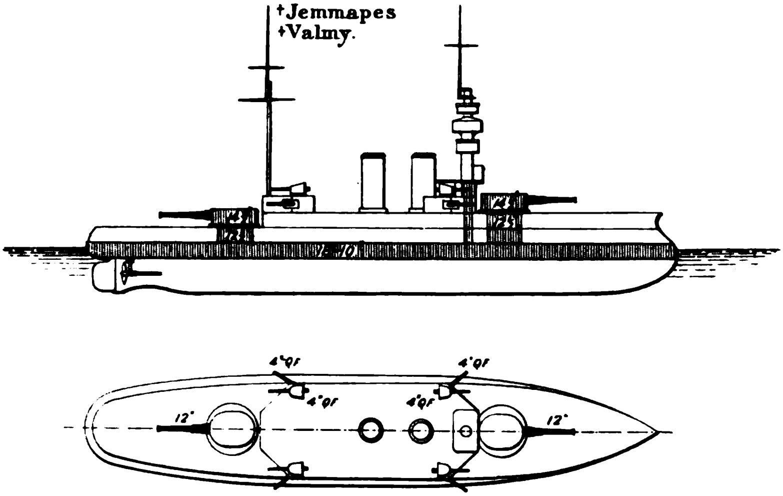


See page 219.

FRANCE.

BATTLESHIPS.

Bouvines
•Tréhouart.
†Jemmapes
†Valmy.

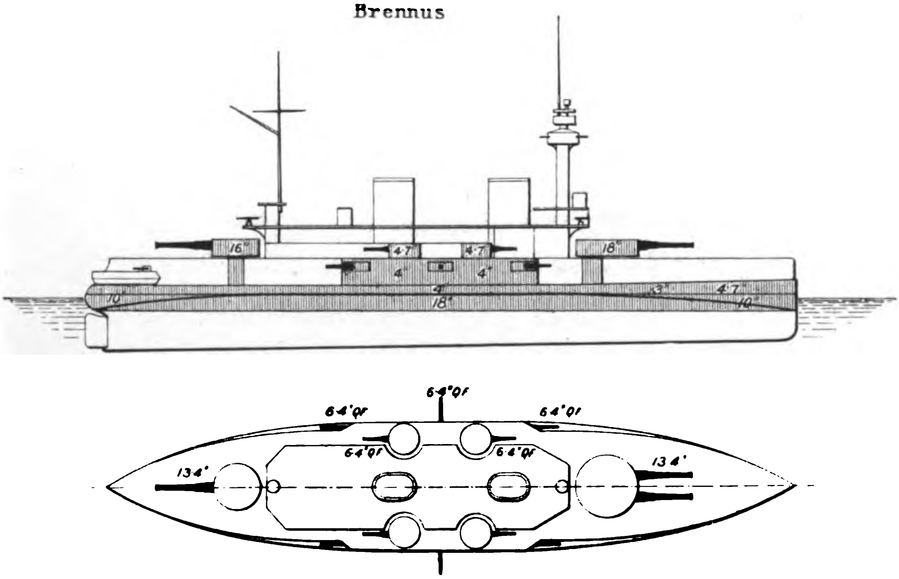


• *The "Tréhouart" has but one funnel.*

† *These ships have 13·4" guns in the turret and only 4·4" guns. The forward 13·4" gun is mounted on the same deck as the after one*

See page 217.

Brennus

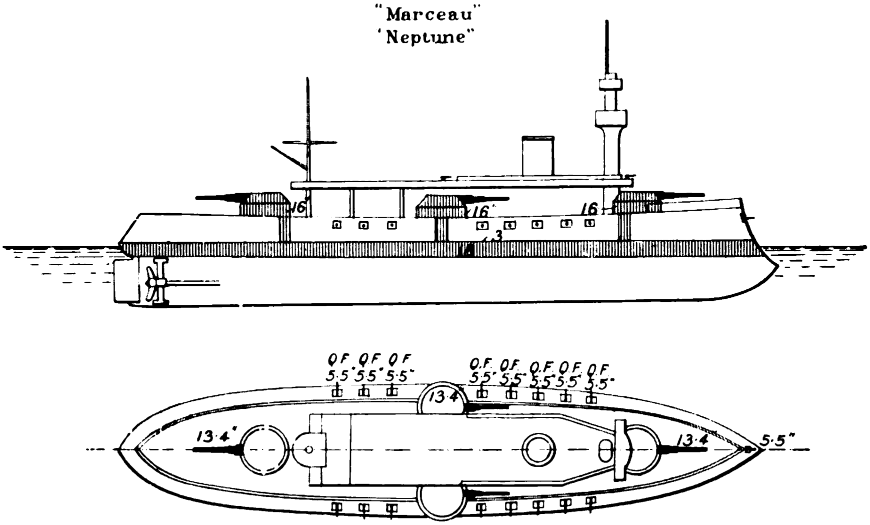


See page 217.

FRANCE.

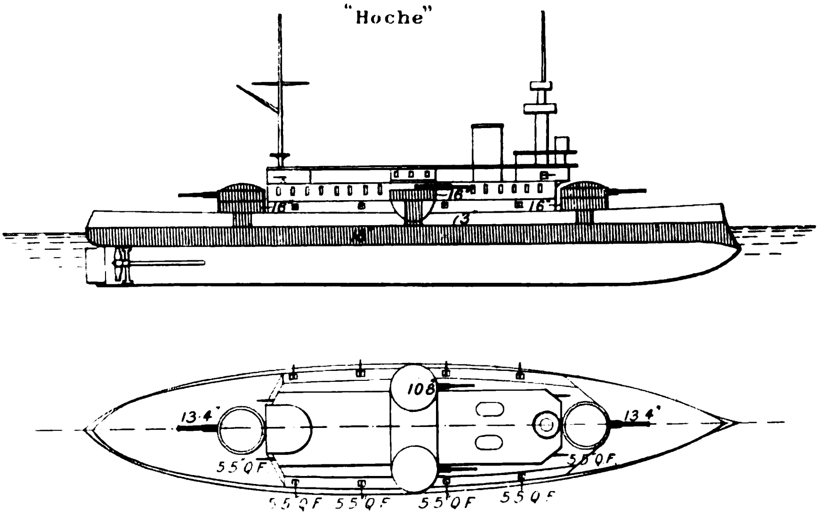
BATTLESHIPS.

"Magenta"
"Marceau"
'Neptune"



See page 220.

"Hoche"



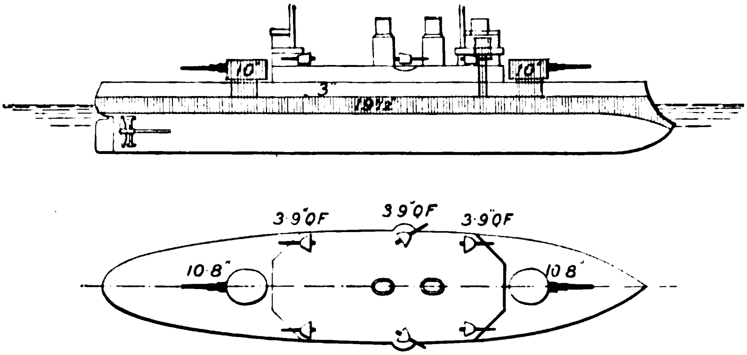
See page 219.

PLATE 26.

FRANCE.

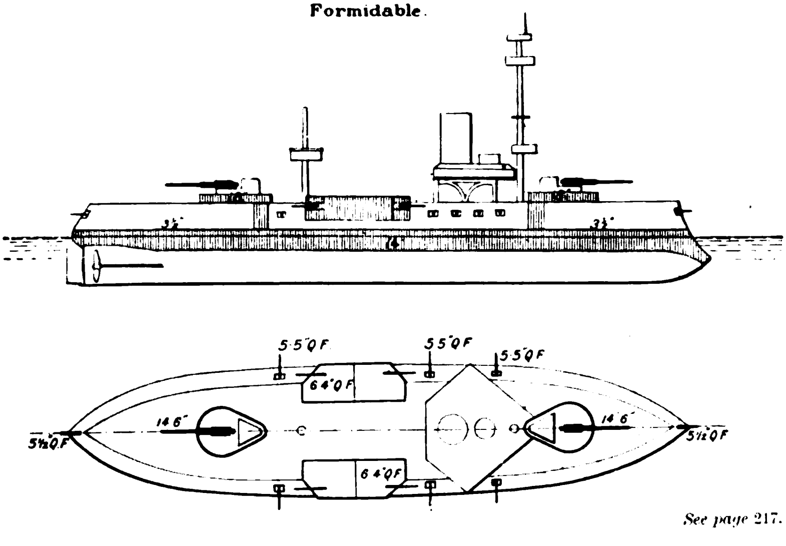
BATTLESHIPS.

"Caiman"
"Indomptable"
"Requin"
"Terrible"



See page 217.

Amiral Baudin.
Formidable.

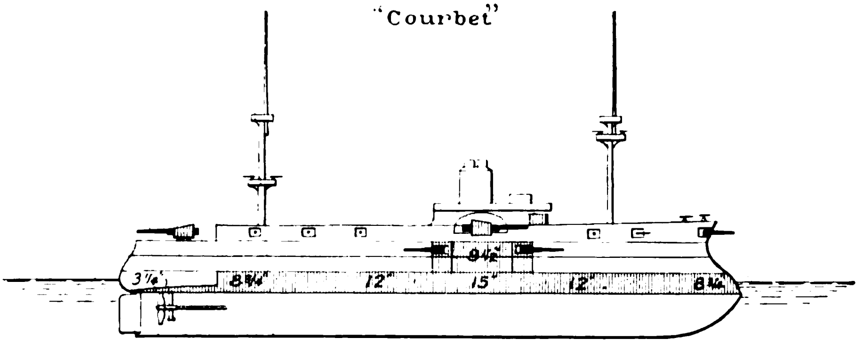


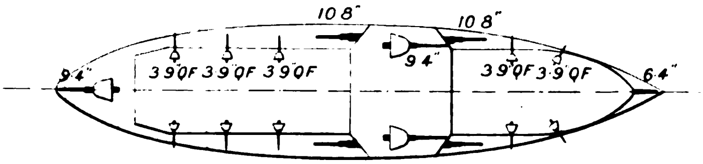
See page 217.

FRANCE.

BATTLESHIP.

"Courbet"

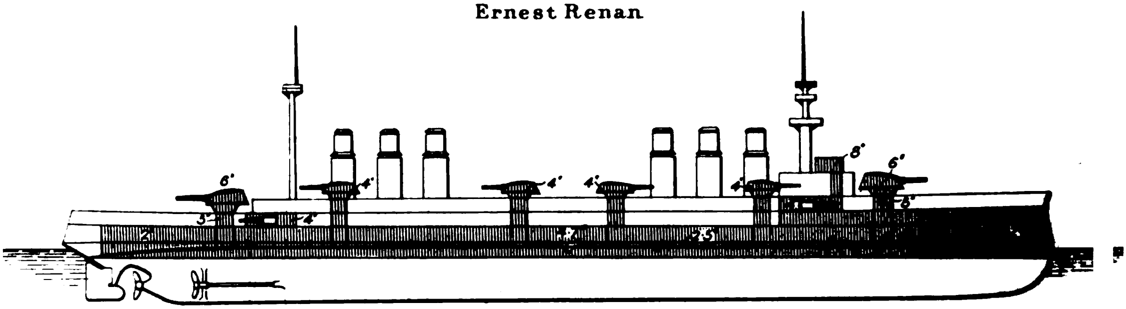


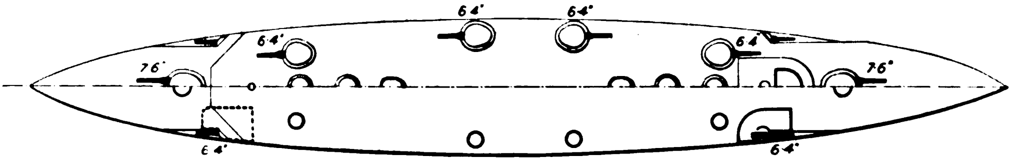


See page 218.

ARMOURED CRUISER.

Ernest Renan



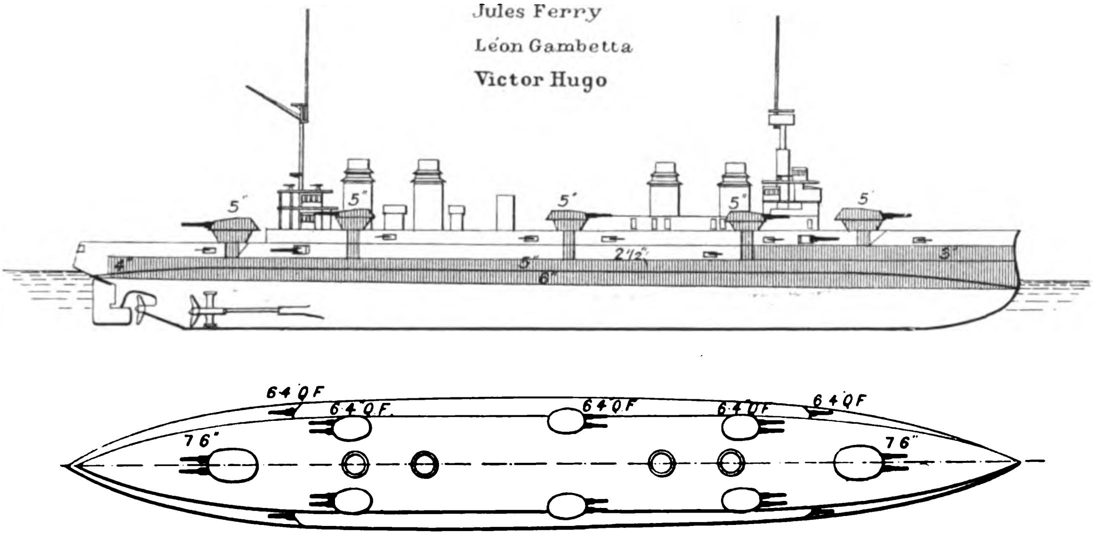


See page 219.

Plate 28.

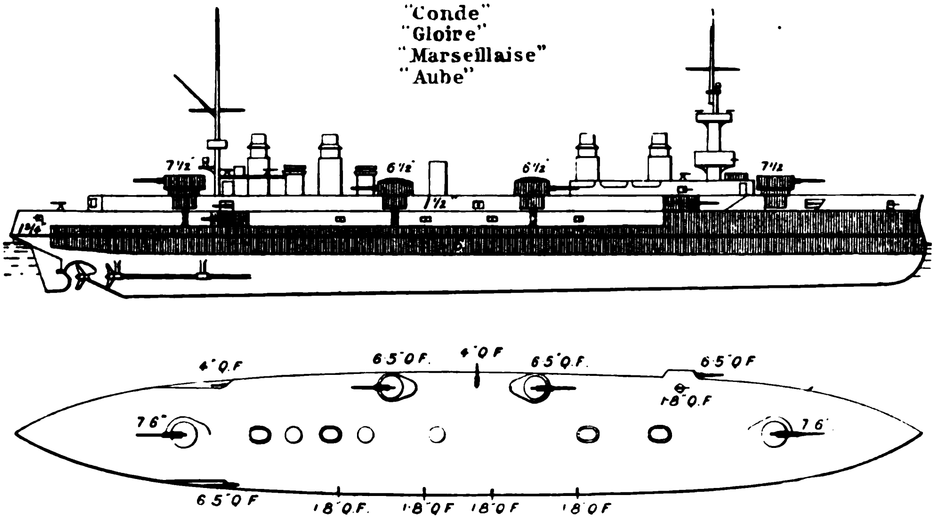
FRANCE.

ARMOURED CRUISERS.



Jules Ferry
Léon Gambetta
Victor Hugo

See page 219.



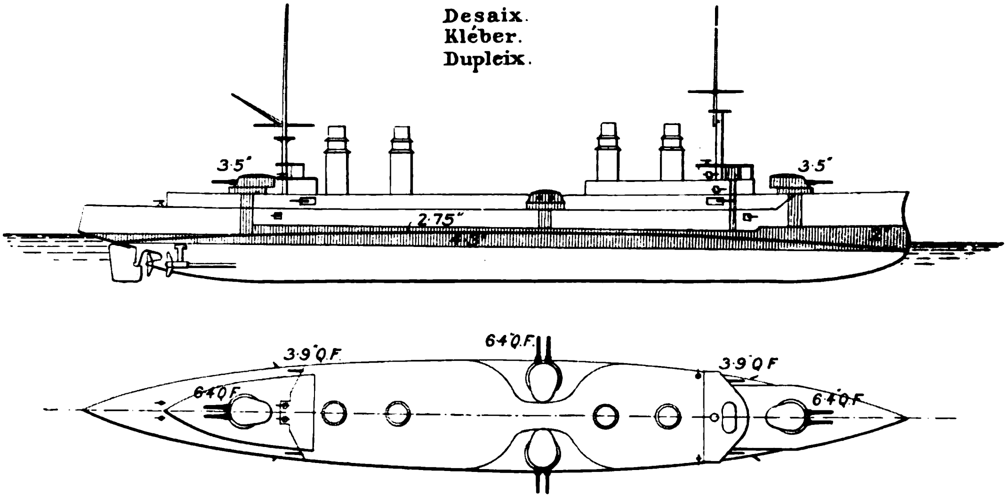
"Conde"
"Gloire"
"Marseillaise"
"Aube"

See page 218.

FRANCE.

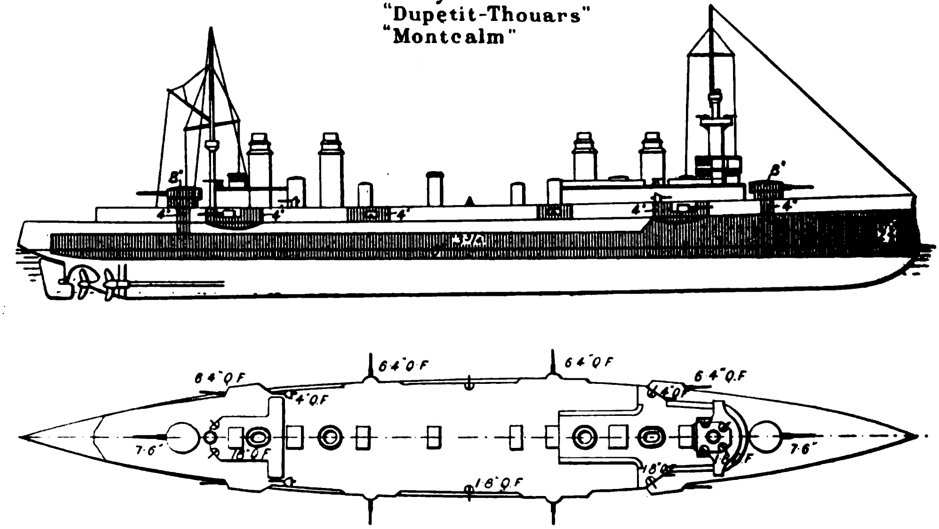
ARMOURED CRUISERS.

Desaix.
Kleber.
Dupleix.



See page 218

"Gueydon"
"Dupetit-Thouars"
"Montcalm"



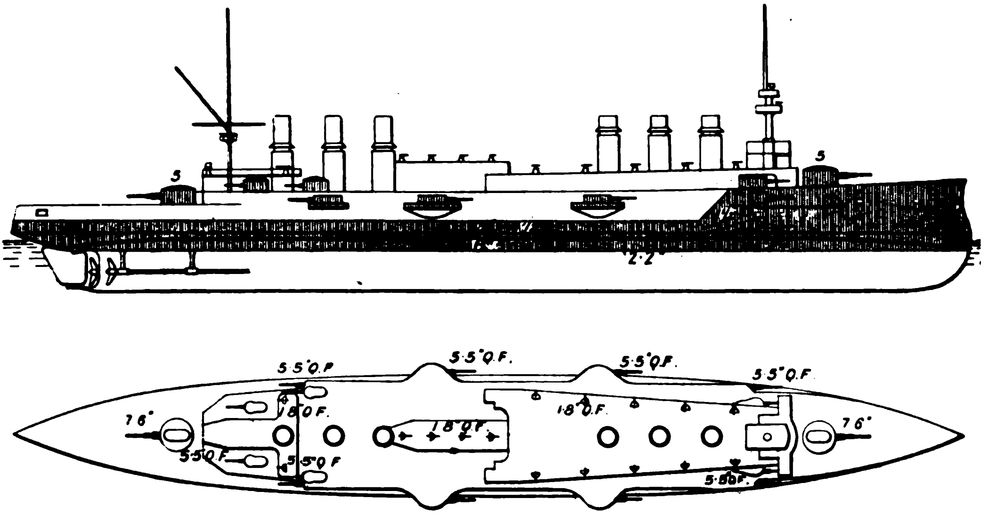
See page 219.

PLATE 30.

FRANCE.

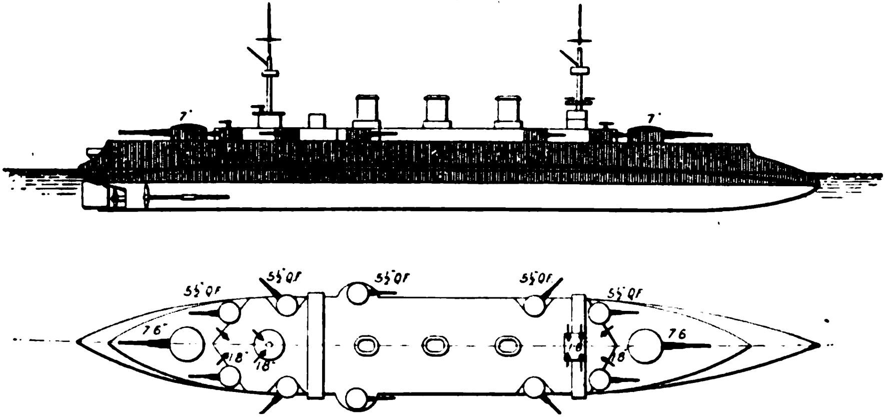
ARMOURED CRUISERS.

"Jeanne d'Arc"



See page 219.

Pothuau

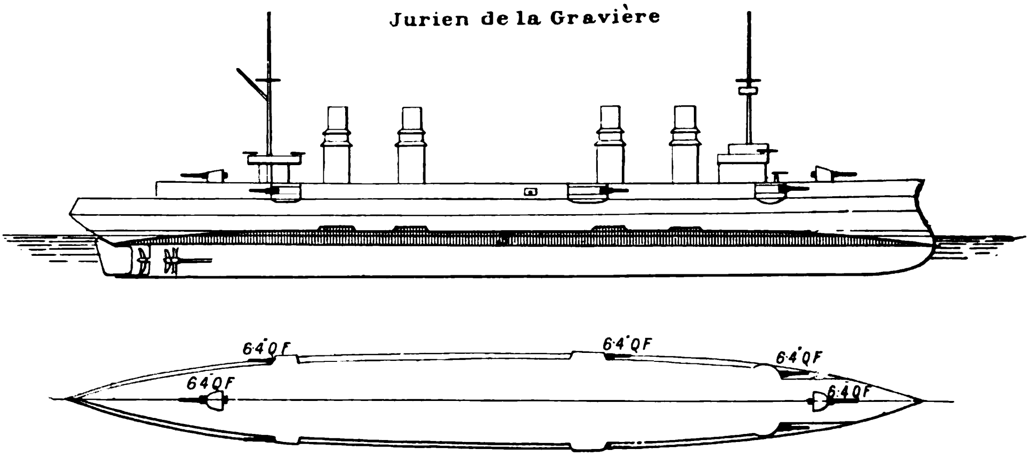


See page 221.

FRANCE.

CRUISER.

Jurien de la Gravière

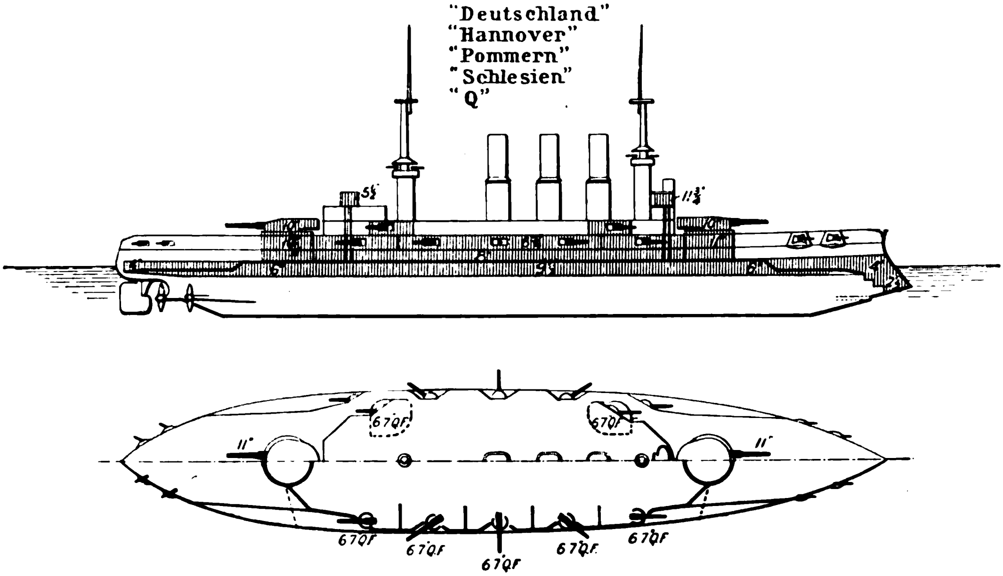


See page 224.

Plate 32.

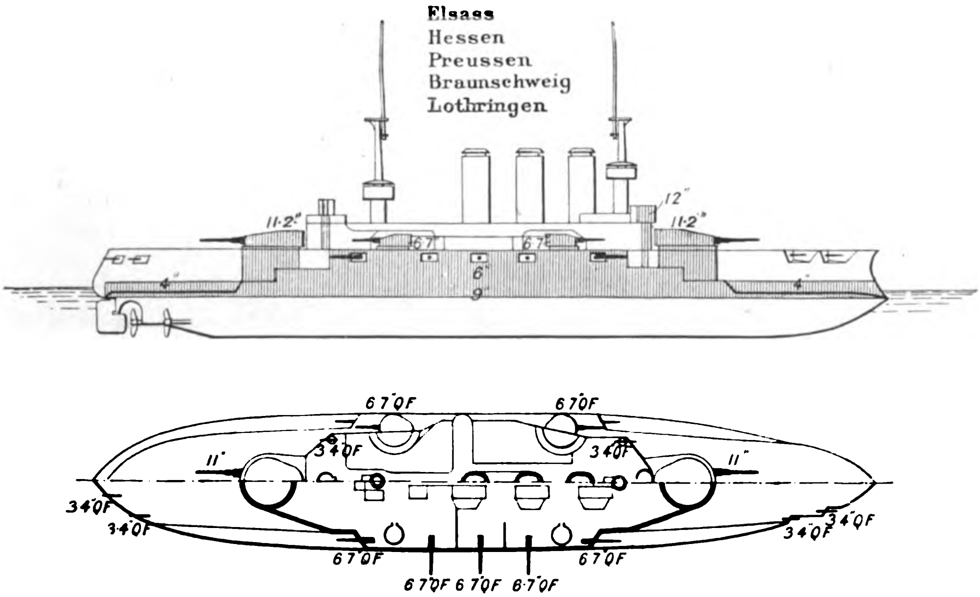
GERMANY.

BATTLESHIPS.



"Deutschland"
"Hannover"
"Pommern"
"Schlesien"
"Q"

See page 227.



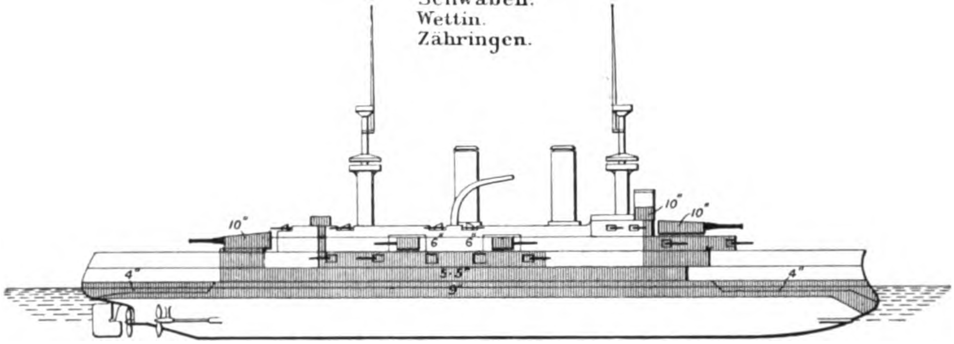
Elsass
Hessen
Preussen
Braunschweig
Lothringen

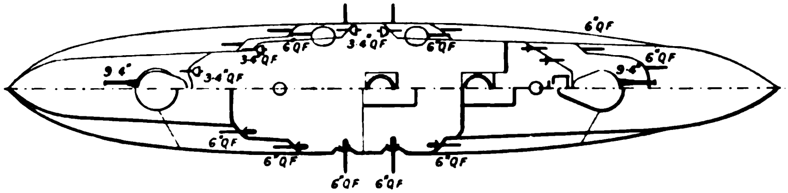
See page 227.

GERMANY.

BATTLESHIPS.

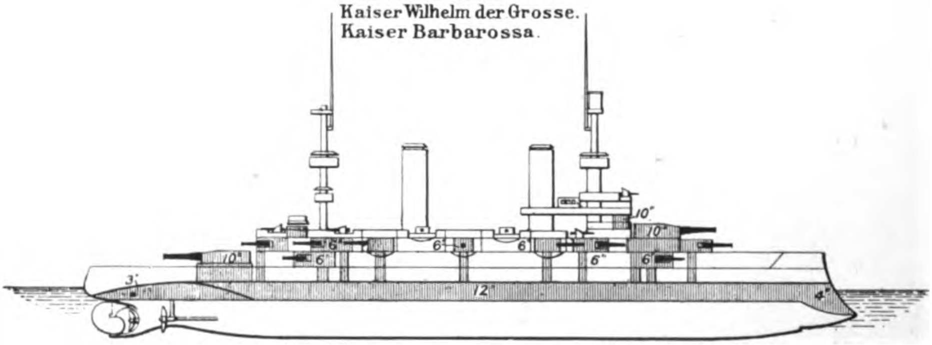
Wittelsbach.
Mecklenburg.
Schwaben.
Wettin.
Zähringen.

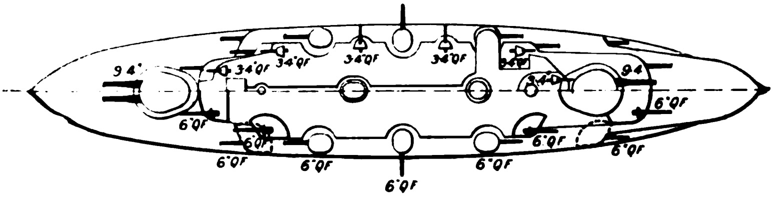




See page 229.

Kaiser Friedrich III.
Kaiser Karl der Grosse.
Kaiser Wilhelm II.
Kaiser Wilhelm der Grosse.
Kaiser Barbarossa.





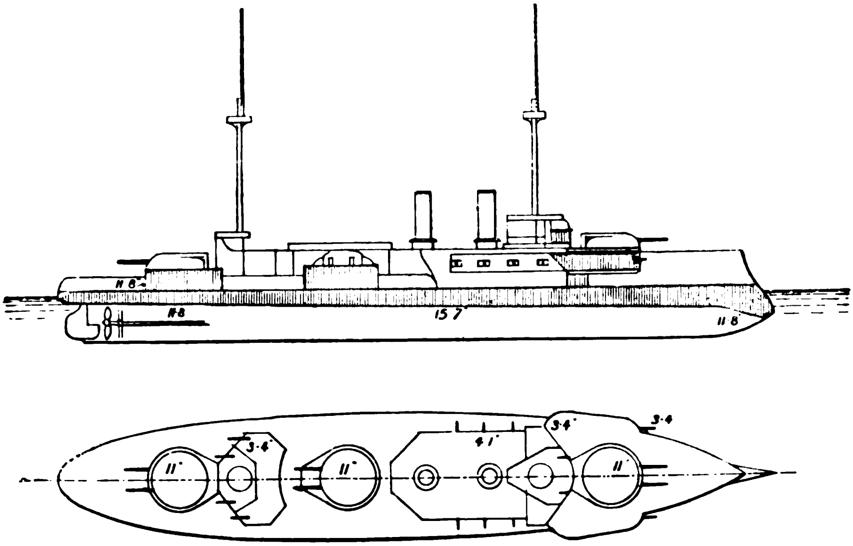
See page 228.

PLATE 34.

GERMANY.

BATTLESHIPS.

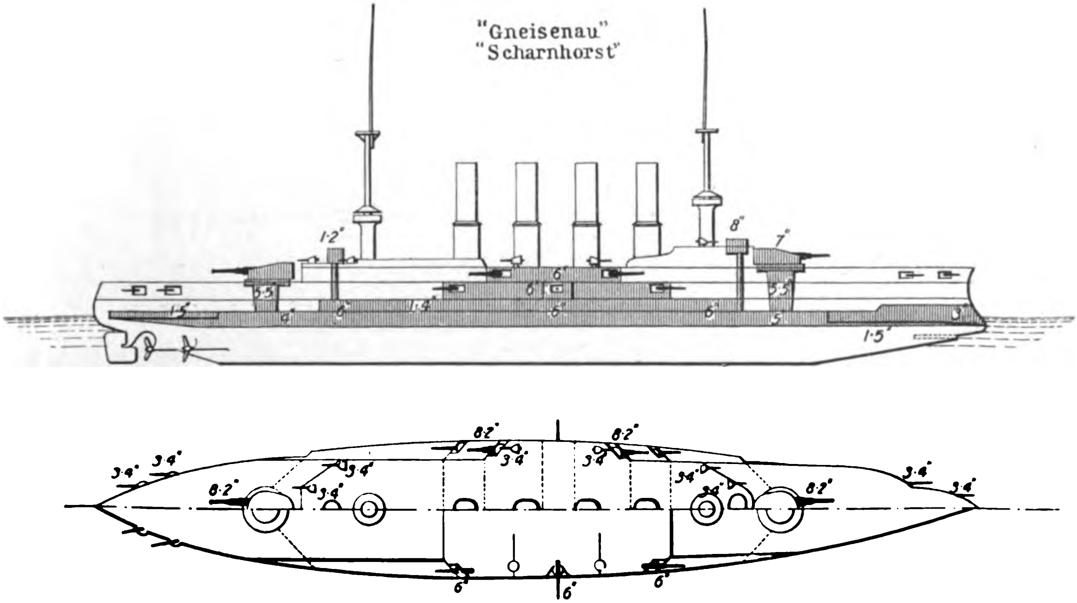
Kürfurst Friedrich Wilhelm
Brandenburg.
Weissenburg.
Wörth



See page 228.

ARMOURED CRUISERS.

"Gneisenau"
"Scharnhorst"



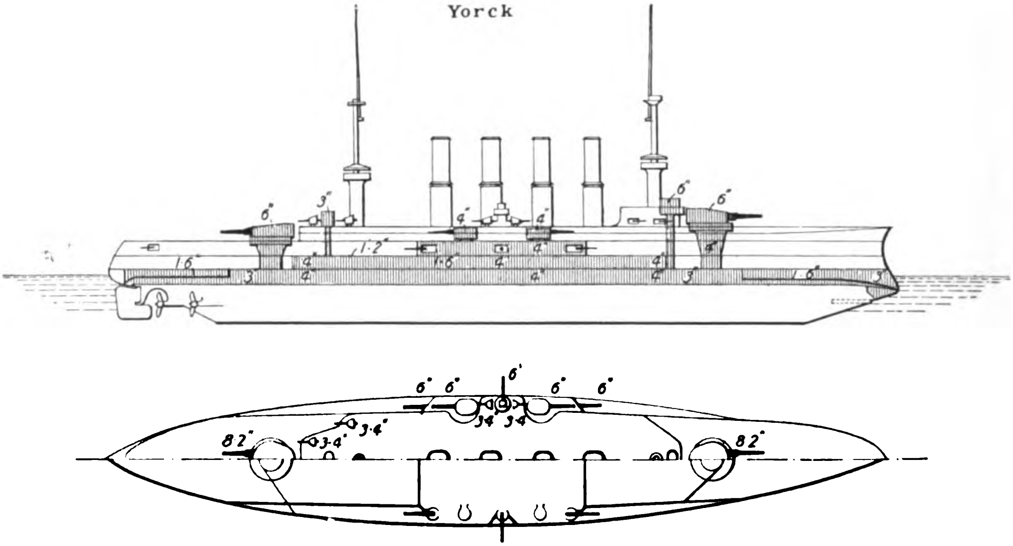
See page 227.

PLATE 35.

GERMANY.

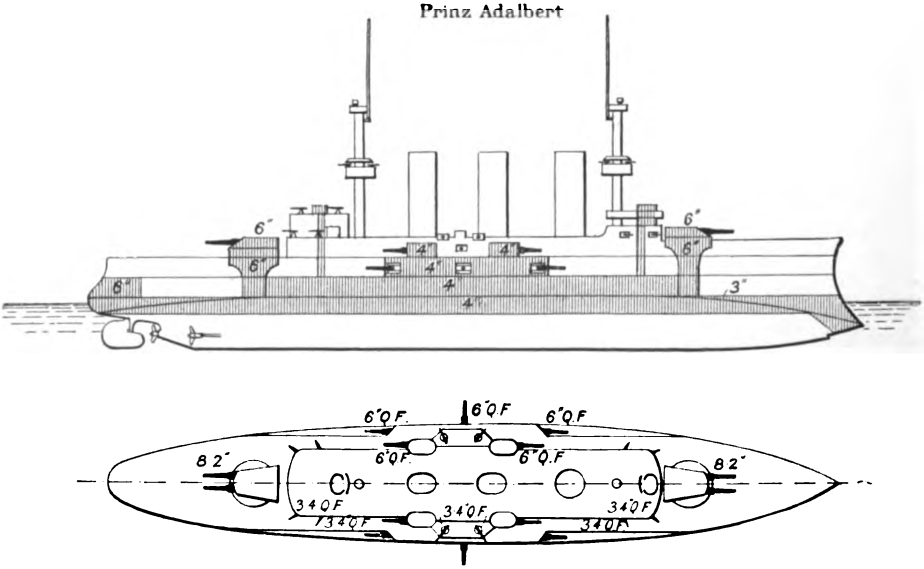
ARMOURED CRUISERS.

Roon
Yorck



See page 229.

Prinz Friedrich Karl
Prinz Adalbert

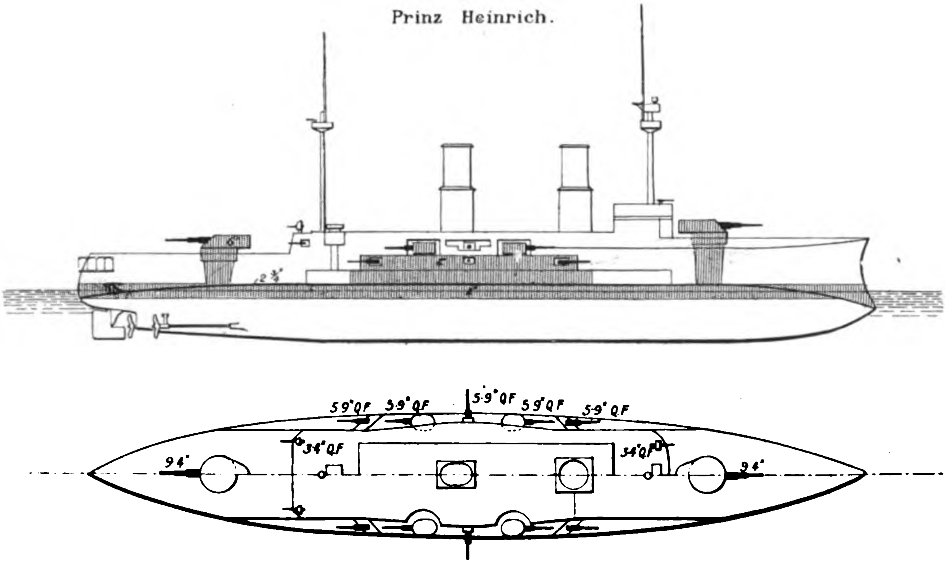


See page 227.

GERMANY.

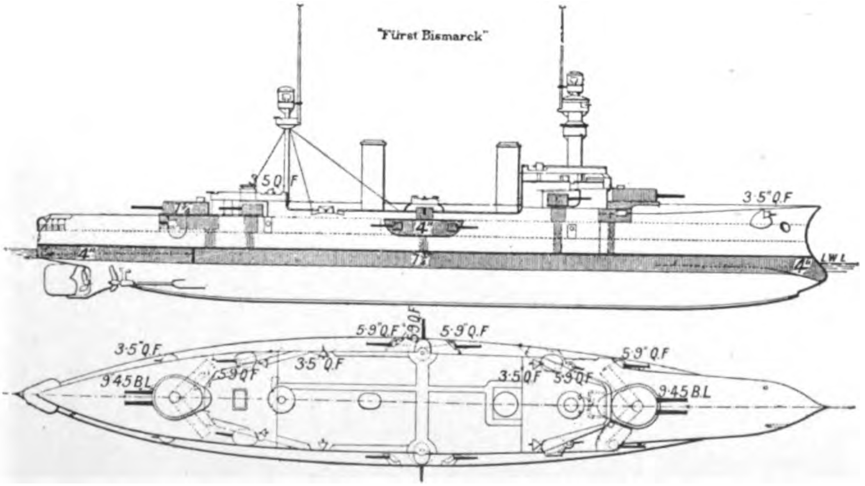
ARMOURED CRUISERS.

Prinz Heinrich.



See page 229.

"Fürst Bismarck"

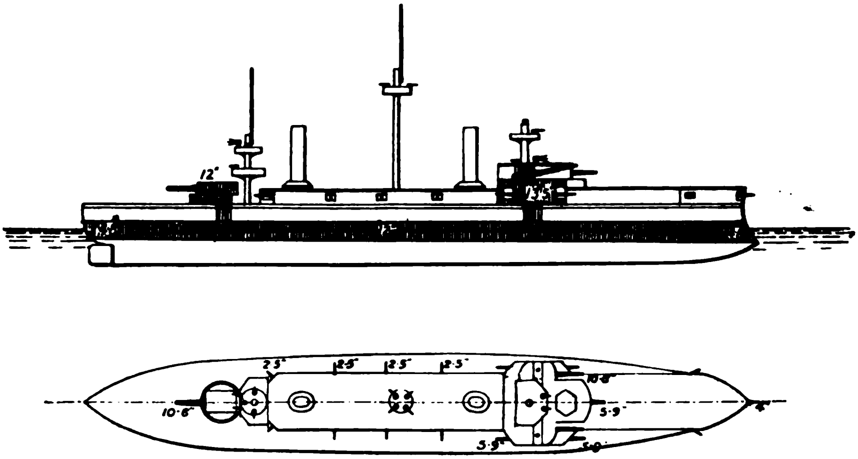


See page 227.

GREECE.

BATTLESHIPS.

Hydra. Psara Spetsai.

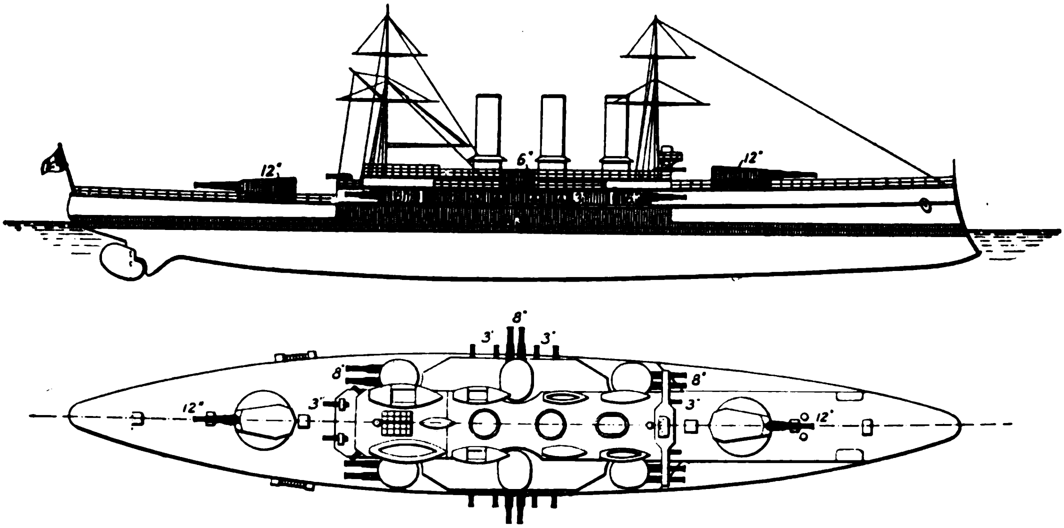


See page 234.

ITALY.

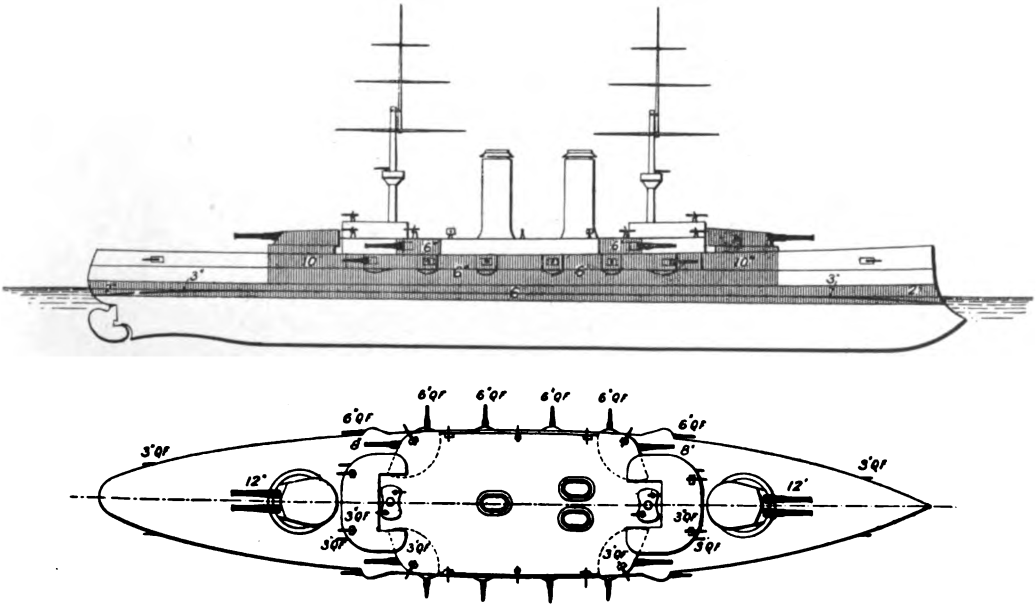
BATTLESHIPS.

Vittorio Emanuele.
Regina Elena.
Napoli.
Roma.



See page 236.

Benedetto Brin.
Regina Margherita.

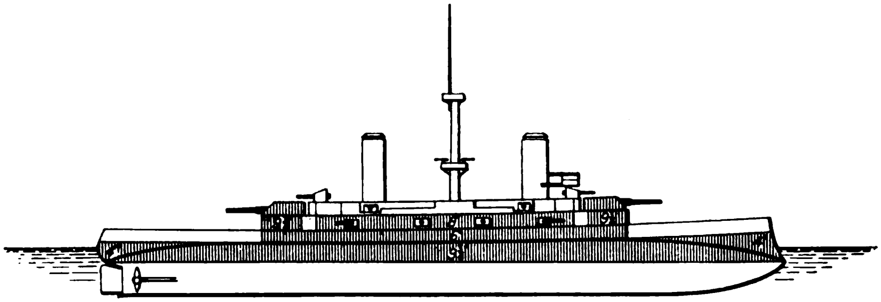


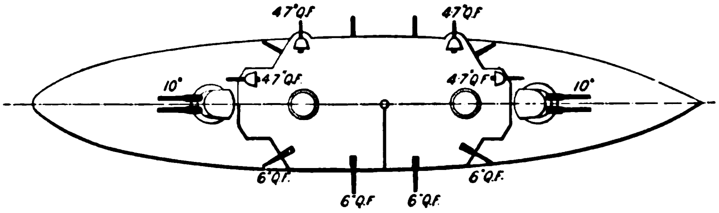
See page 235.

ITALY.

BATTLESHIPS.

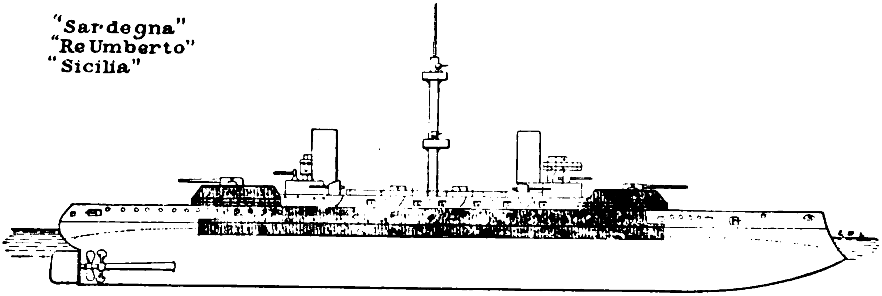
Ammiraglio di St. Bon
Emanuele Filiberto



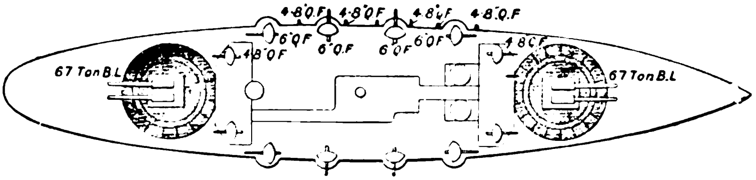


See page 235.

"Sardegna"
"Re Umberto"
"Sicilia"



Note Sardegna is 9 Ft. 8in. longer and 3 Ft. 3in. broader than the other two



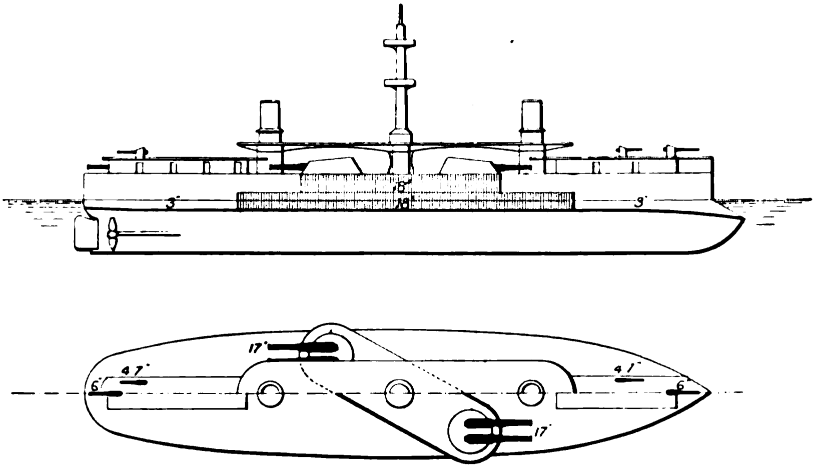
See page 236.

Plate 40.

ITALY.

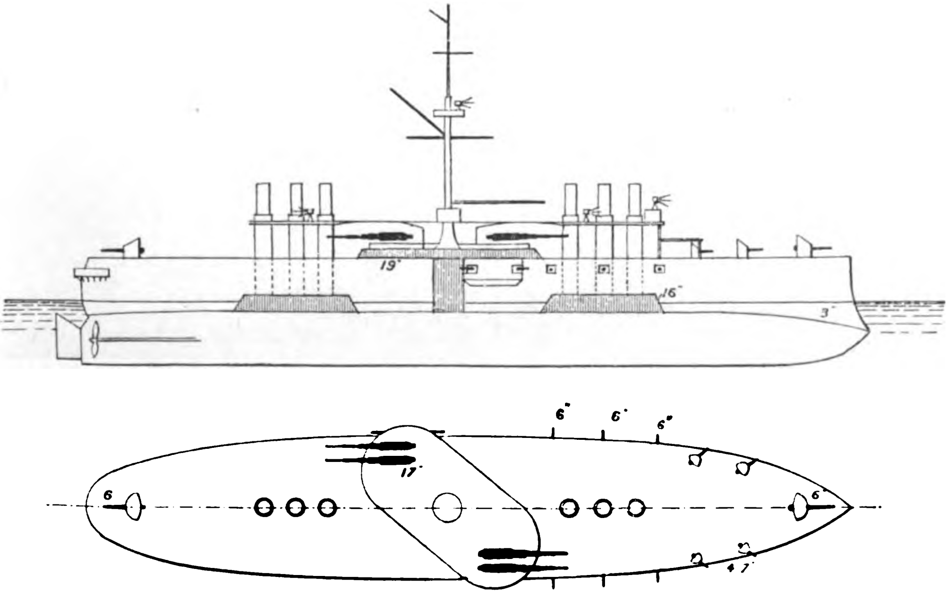
BATTLESHIPS.

Andrea Doria.
Francesco Morosini.
Ruggiero di Lauria.



See page 235.

Italia.
Lepanto. ✻



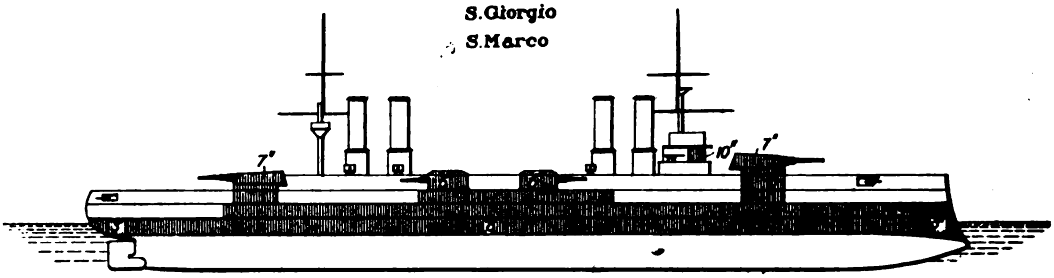
✻ *The Lepanto has four funnels.*

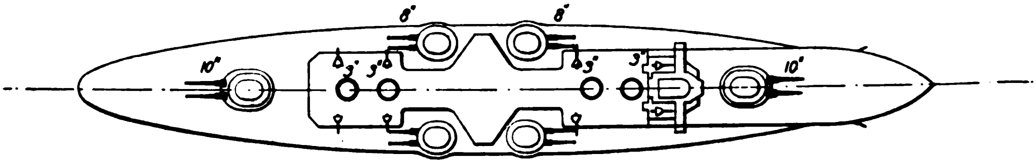
See page 235.

ITALY.

ARMOURED CRUISERS.

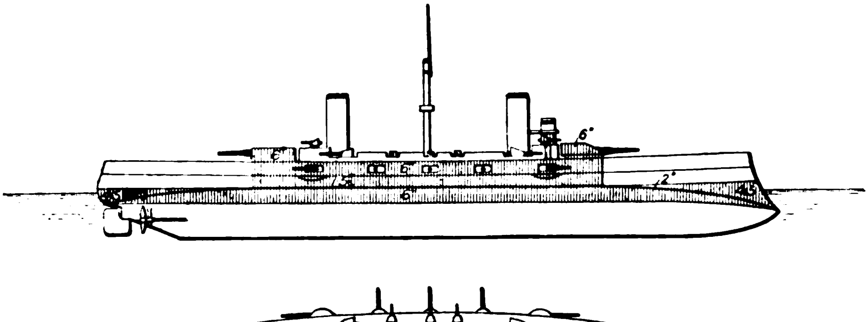
Amalfi
Pisa
S. Giorgio
S. Marco

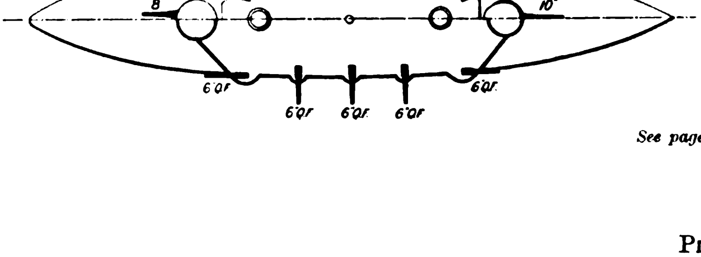




See page 235.

Francesco Ferrucio
Guiseppe Garibaldi
Varese





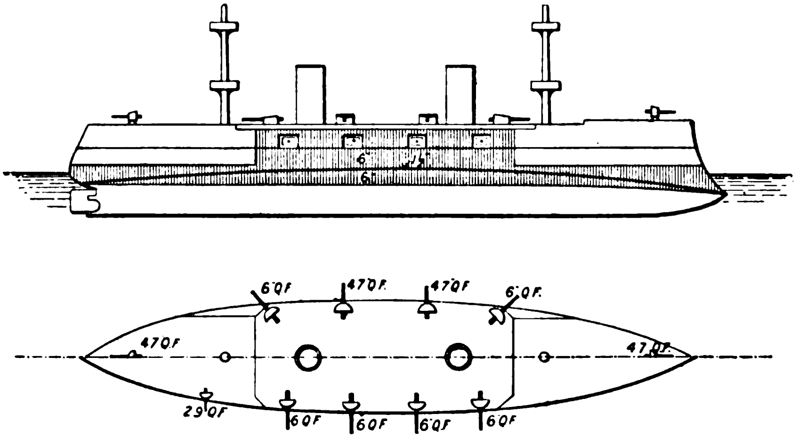
See page 235.

PLATE 42.

ITALY.

ARMOURED CRUISERS.

"Carlo Alberto"
"Vettor Pisani"



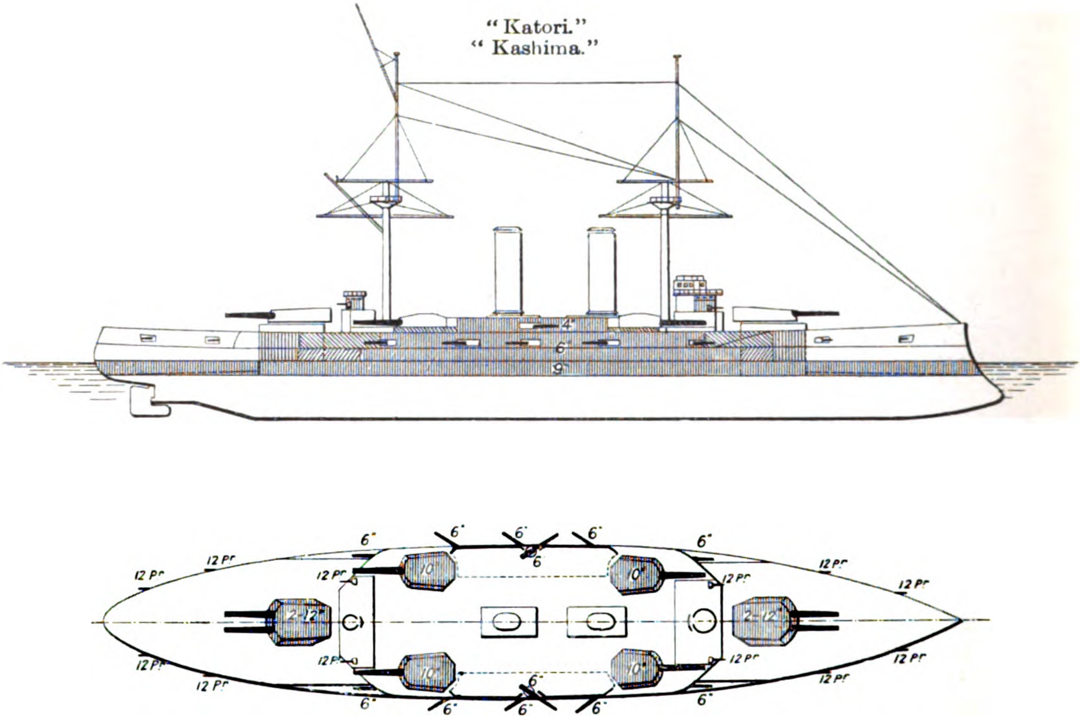
See page 235.

PLATE 43.

JAPAN.

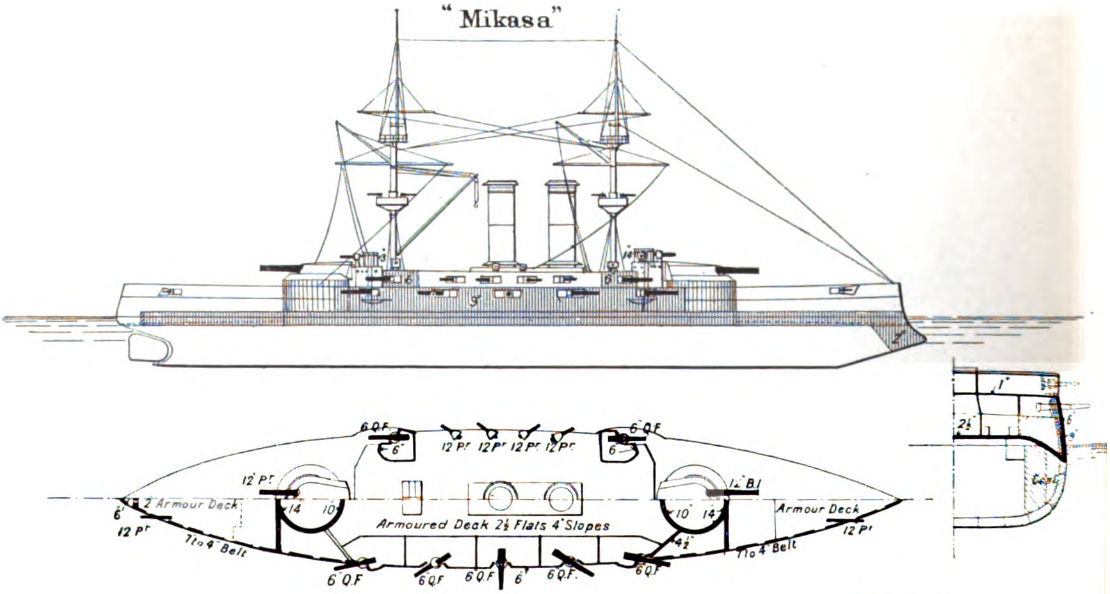
BATTLESHIPS.

"Katori."
"Kashima."



See page 241.

"Mikasa"



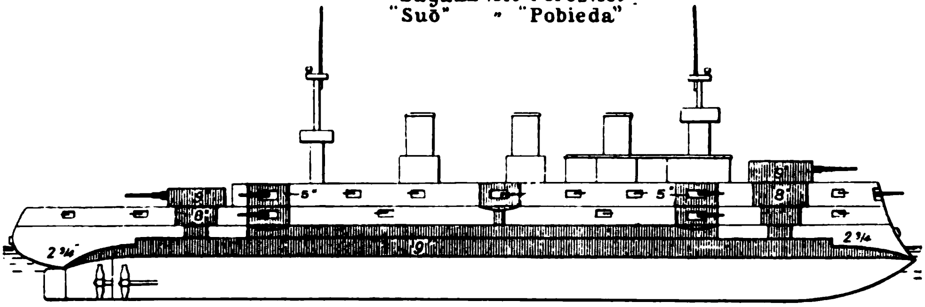
See page 241.

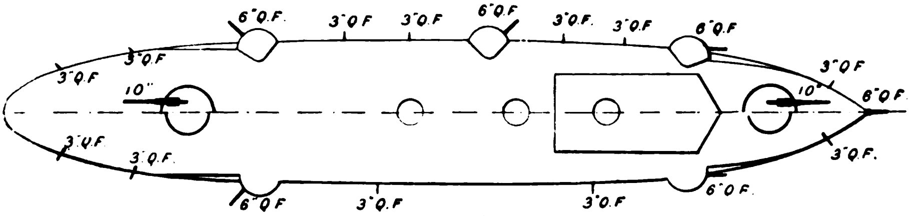
Plate 44.

JAPAN.

BATTLESHIPS.

"Sagami" *late* "Peresviet".
"Suō" " "Pobieda"



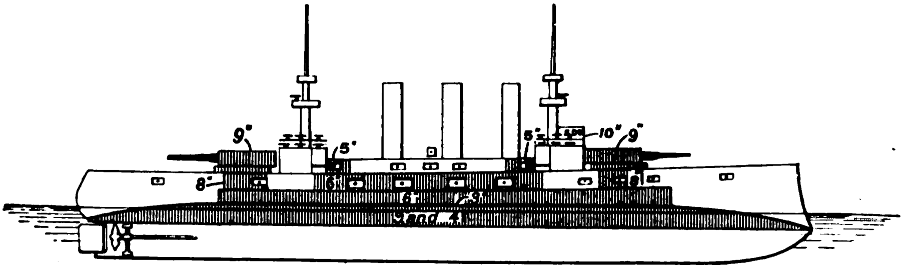


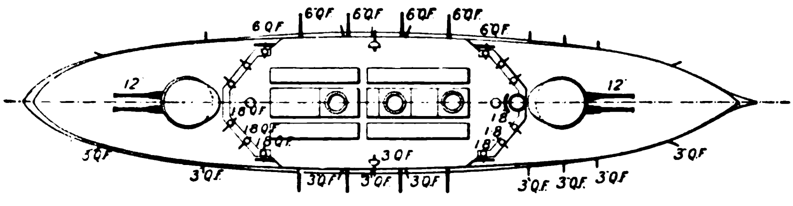
Note: In the "Pobieda" the Belt Extends the Full Length of the Ship.

See page 241.

See Plate 54 for Iwami, *ex* Orel

"Hizen" *late* "Retvizan"



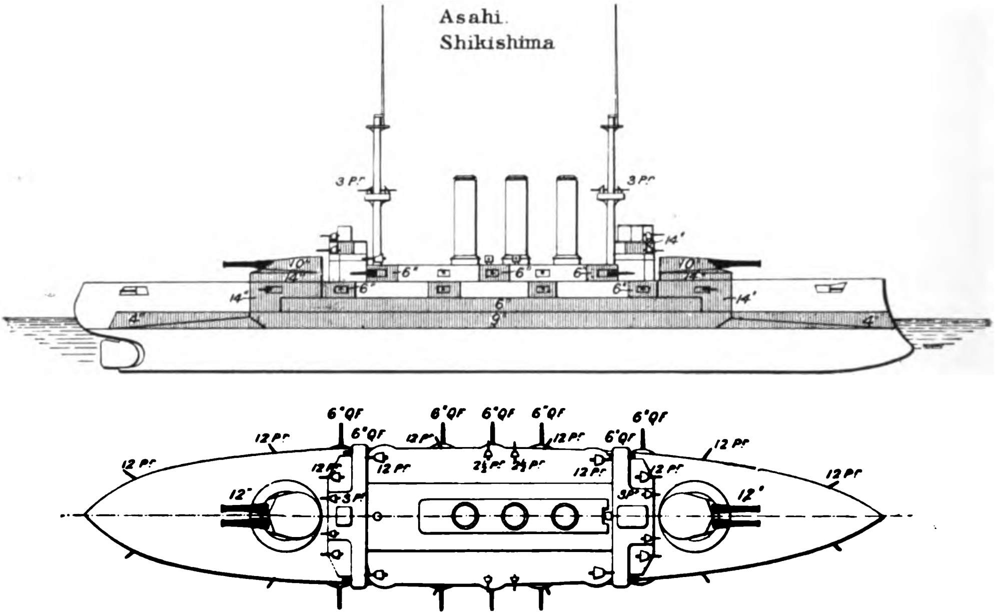


See page 240.

JAPAN.

BATTLESHIPS.

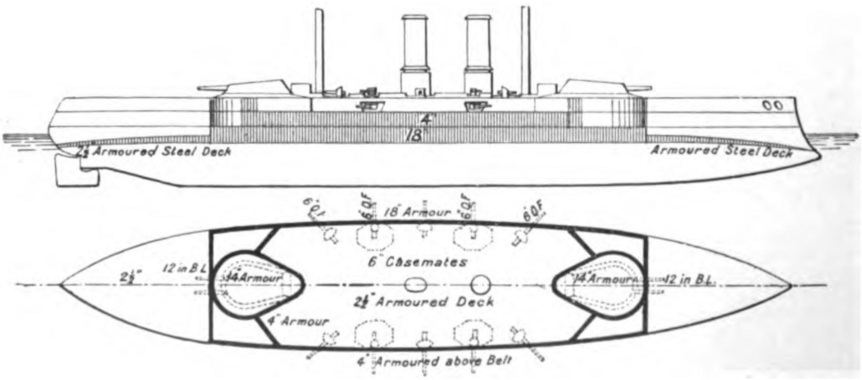
Asahi.
Shikishima



The "Asahi" has but two funnels.

See page 240

"Fuji."



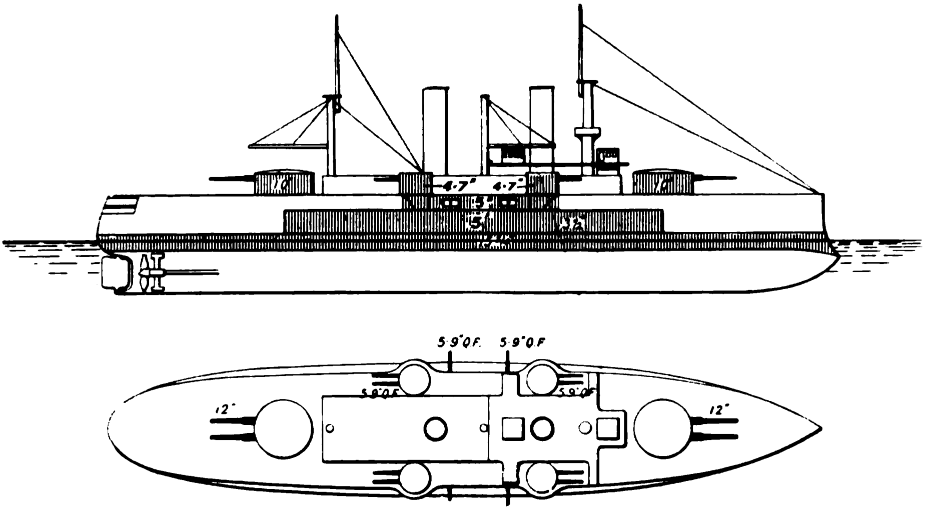
See page 240.

Plate 46.

JAPAN.

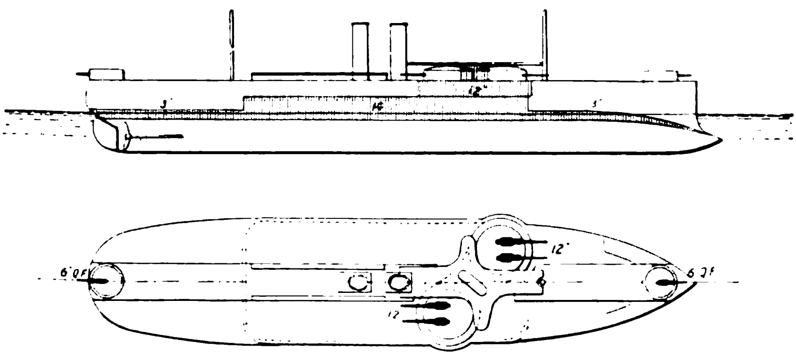
BATTLESHIPS.

"Tango" *late* "Poltava"



See page 241.

Chin Yen.



See page 240.

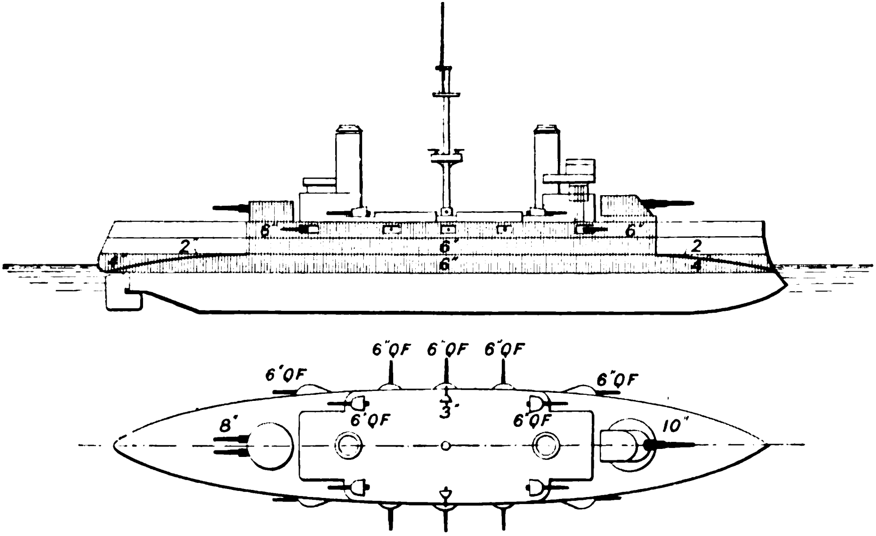
PLATE 47.

e

JAPAN.

ARMOURED CRUISERS.

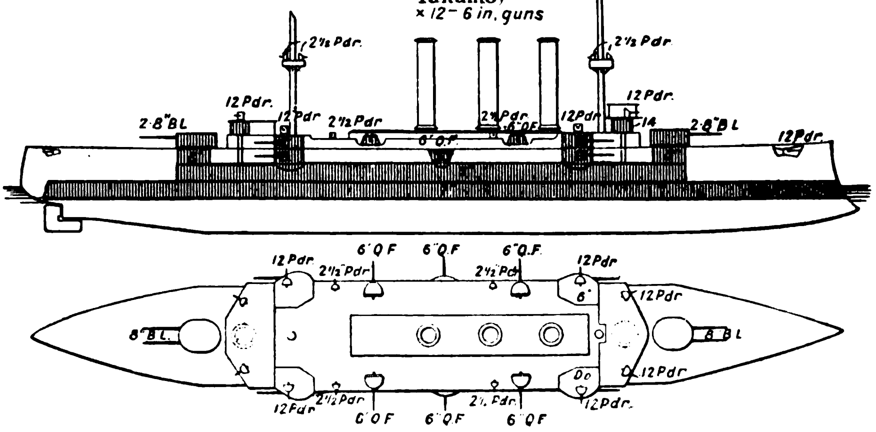
"Kasuga"
"Nisshin"



The Nisshin has 2-8 in. guns in fore barbette.

See page 241.

Idzumo
Iwati
Adzuma
Yakumo ×
× 12-6 in. guns



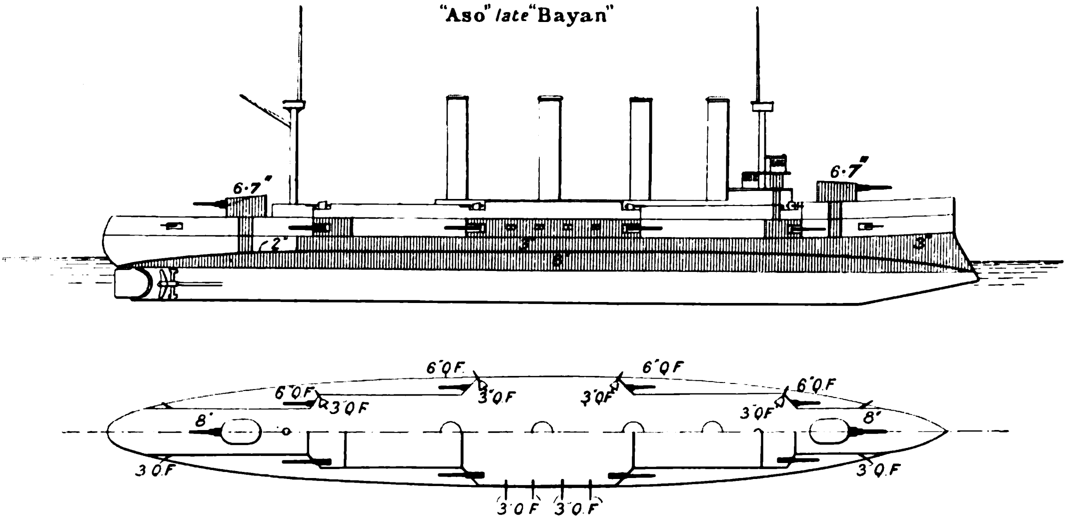
See page 240.

PLATE 48.

JAPAN.

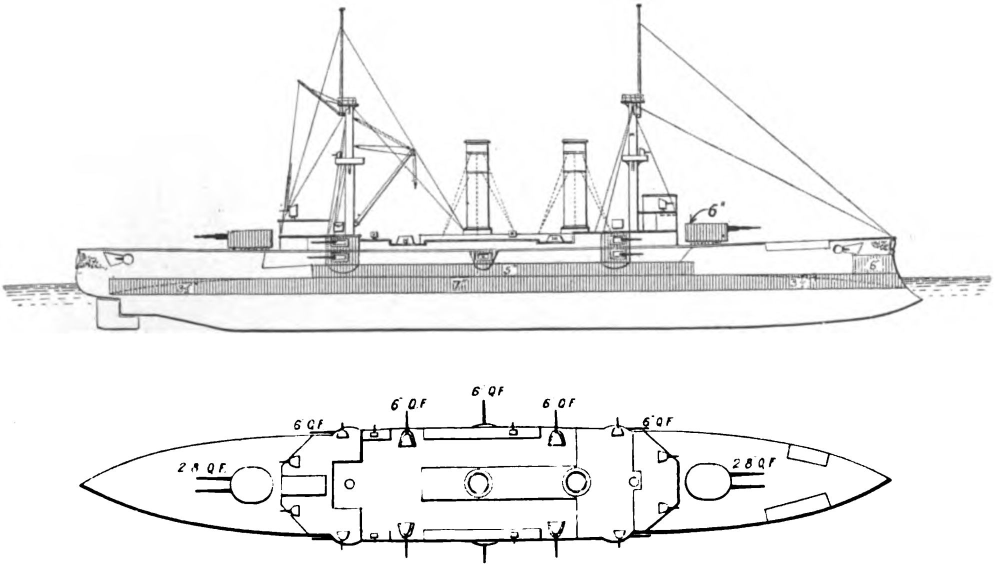
ARMOURED CRUISERS.

"Aso" *late* "Bayan"



See page 240.

Asama and Tokiwa



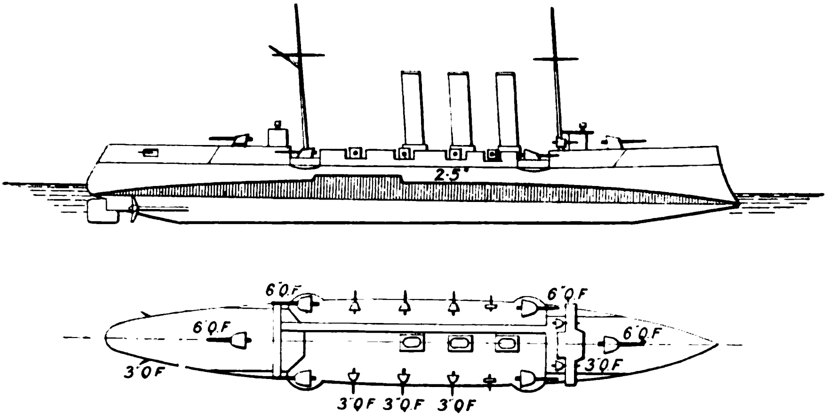
See page 240.

PLATE 49.

JAPAN.

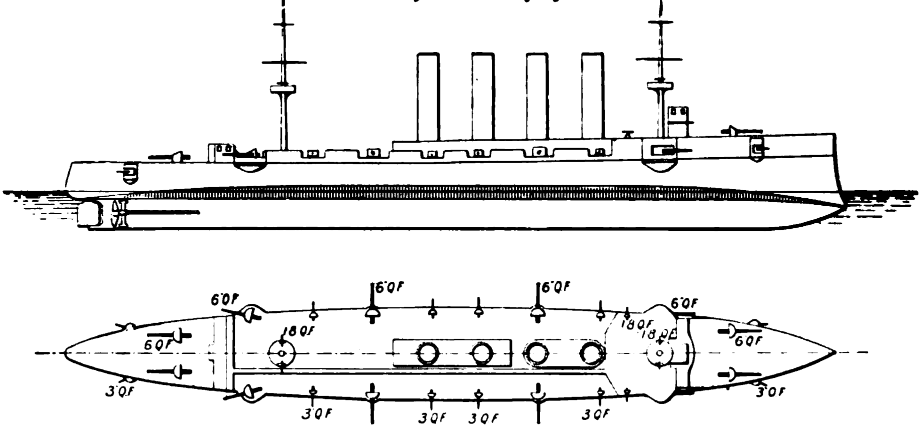
CRUISERS.

Niitaka.
Tsushima



See page 242.

"Sōya" *late* "Waryag"

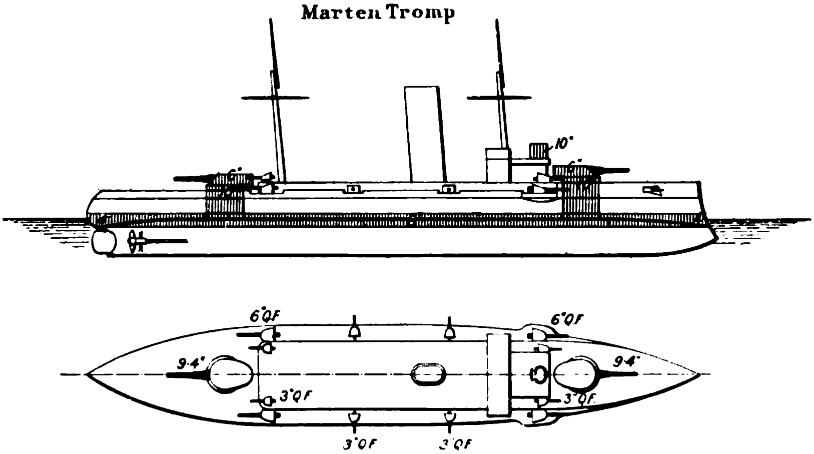


See page 243.

NETHERLANDS.

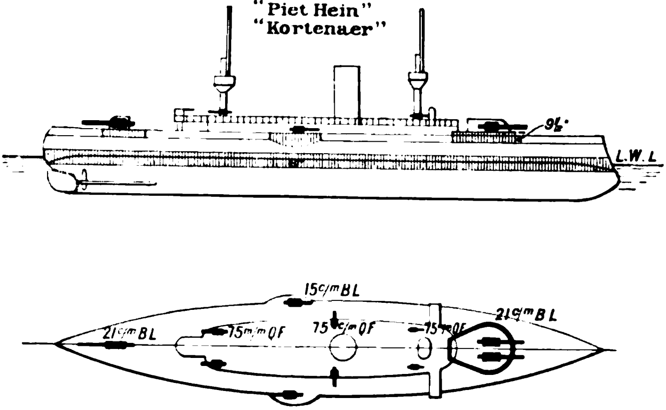
COAST DEFENCE SHIPS.

De Ruyter
Hertog Hendrik
Koningin Regentes
Marten Tromp



See page 244

"Evertsen"
"Piet Hein"
"Kortenaer"



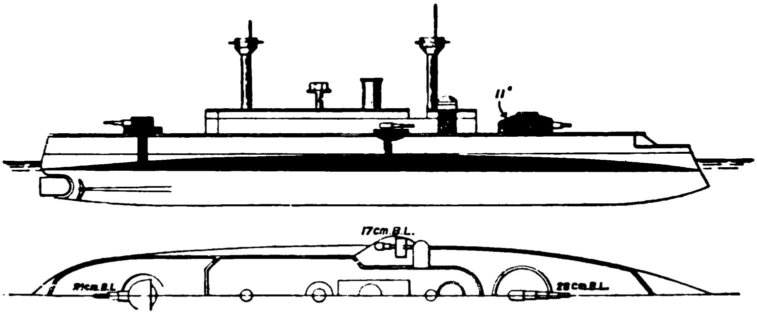
See page 244.

Plate 51.

NETHERLANDS.

BATTLESHIP.

Koningin Wilhelmina der Nederlanden.

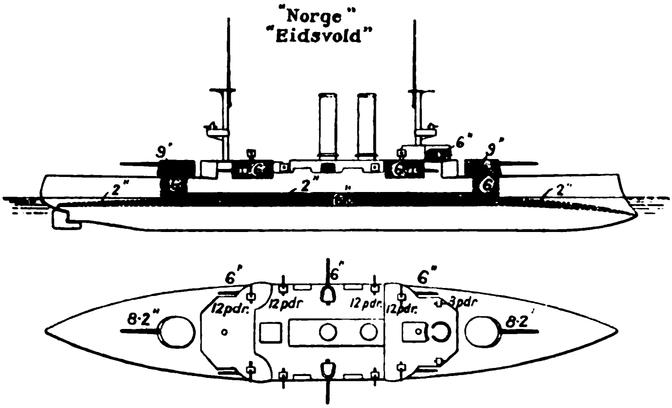


See page 244.

Plate 52.

NORWAY.

BATTLESHIPS.



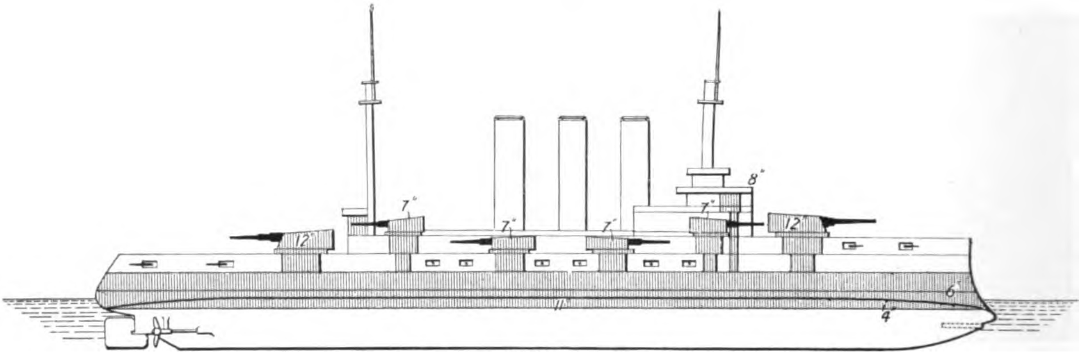
See page 247.

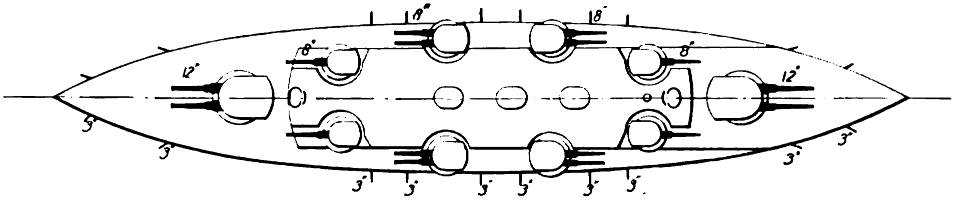
PLATE 53.

RUSSIA.

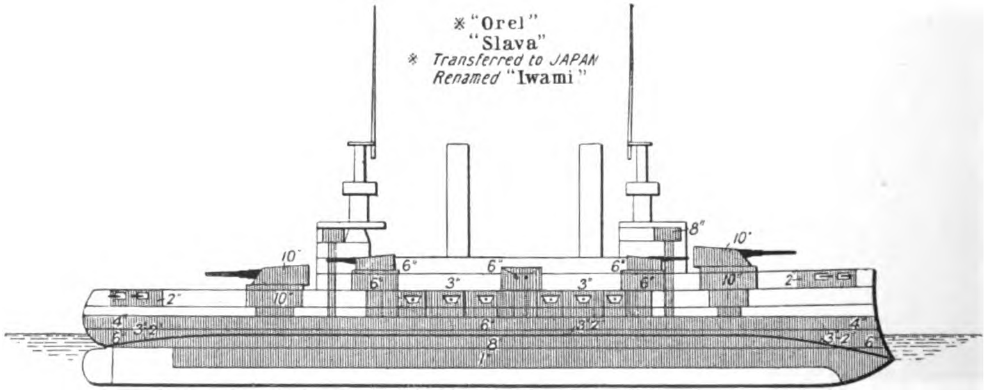
BATTLESHIPS.

Imperator Pavel
Andrei Pervozvannyi

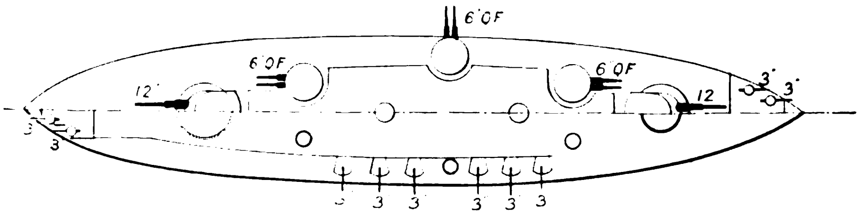




See page 251.



※ "Orel"
"Slava"
※ *Transferred to JAPAN*
Renamed "Iwami"



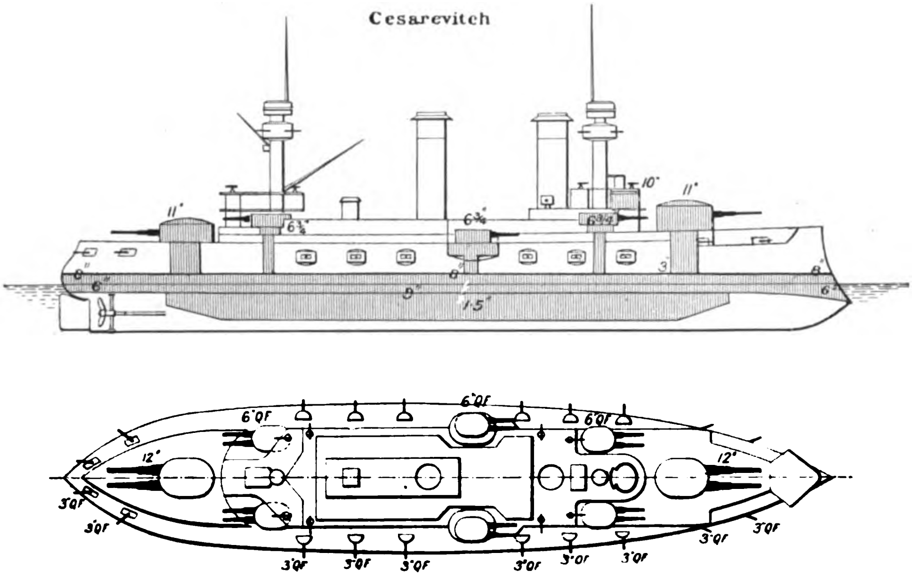
See page 240.

Plate 54.

RUSSIA.

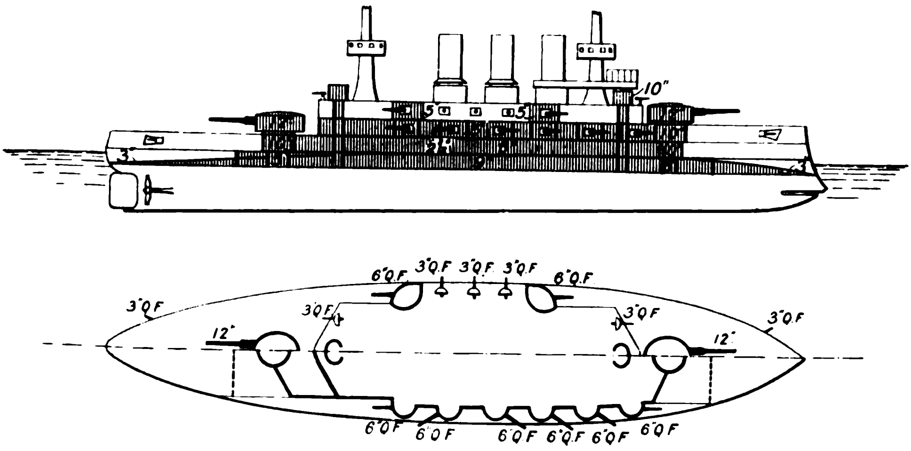
BATTLESHIPS.

Cesarevitch



See page 250.

Panteleimon, *ex* Kniaz Potemkine Tavritchesky.

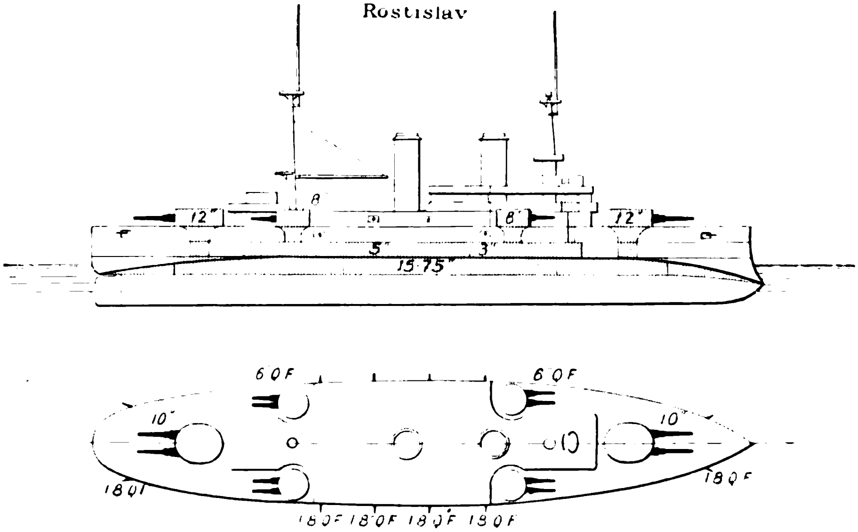


See page 251.

RUSSIA.

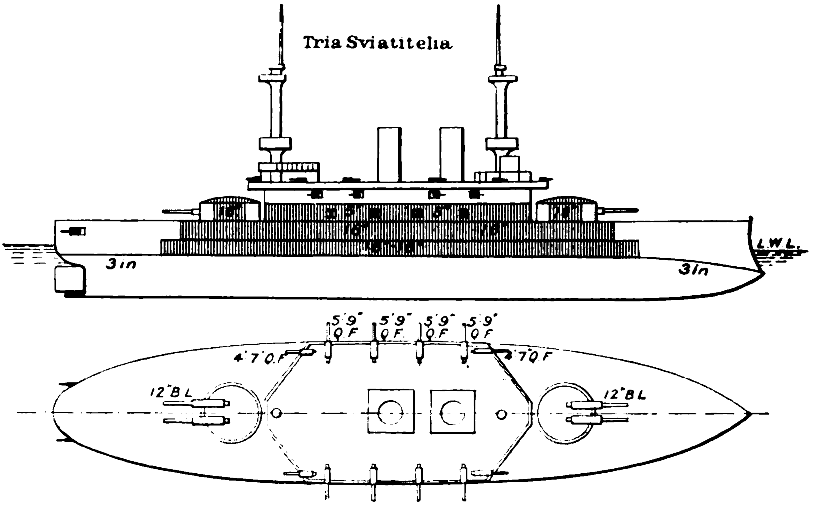
BATTLESHIPS.

Rostislav



See page 251.

Tria Sviatitelia



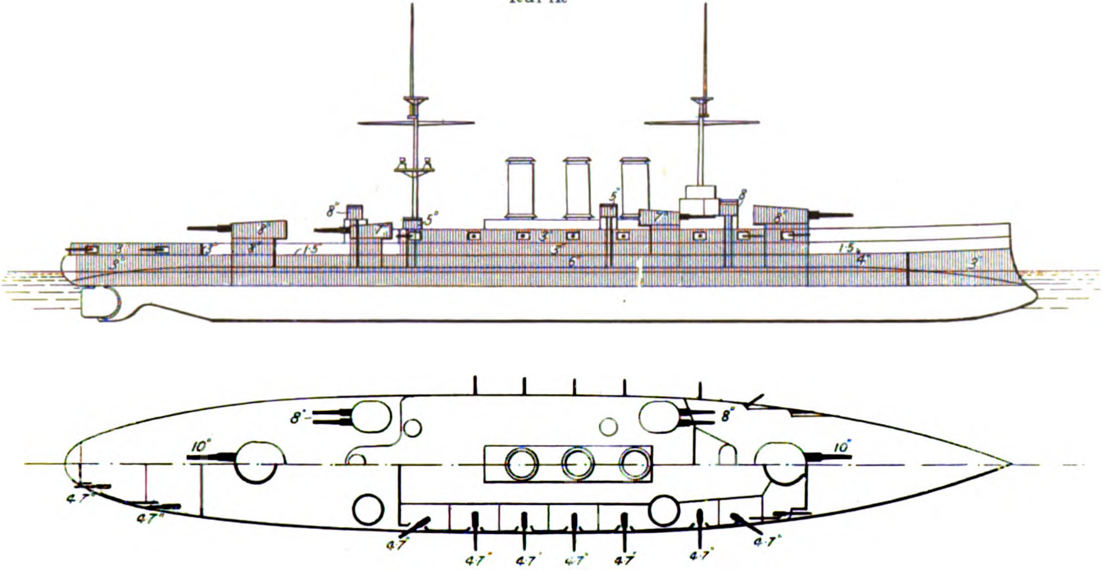
See page 251.

Plate 56.

RUSSIA.

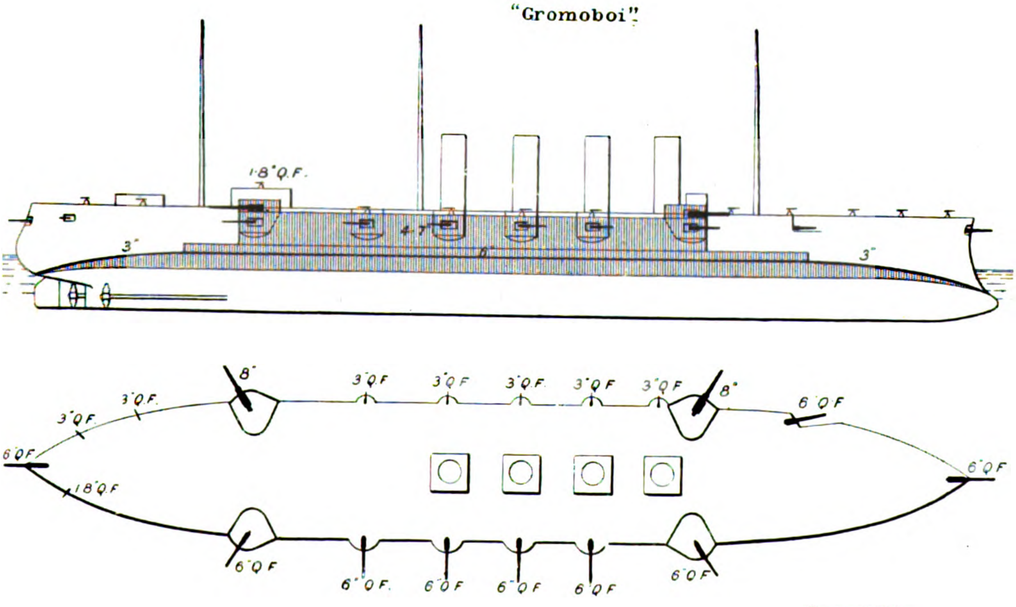
ARMOURED CRUISERS.

"Rurik"



See page 251.

"Gromoboi"

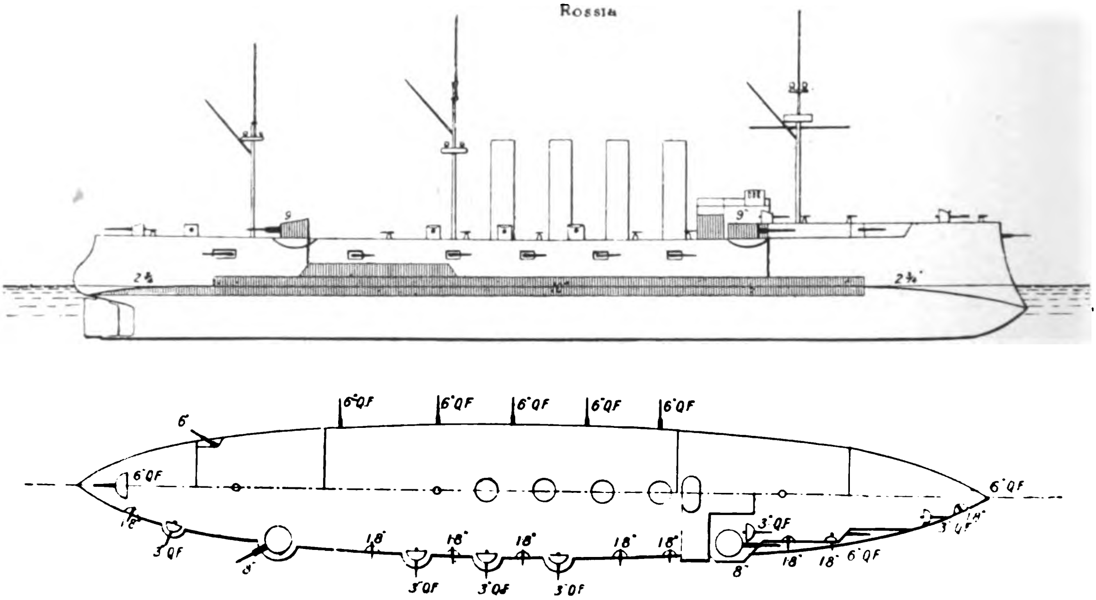


See page 250.

PLATE 57.

RUSSIA.

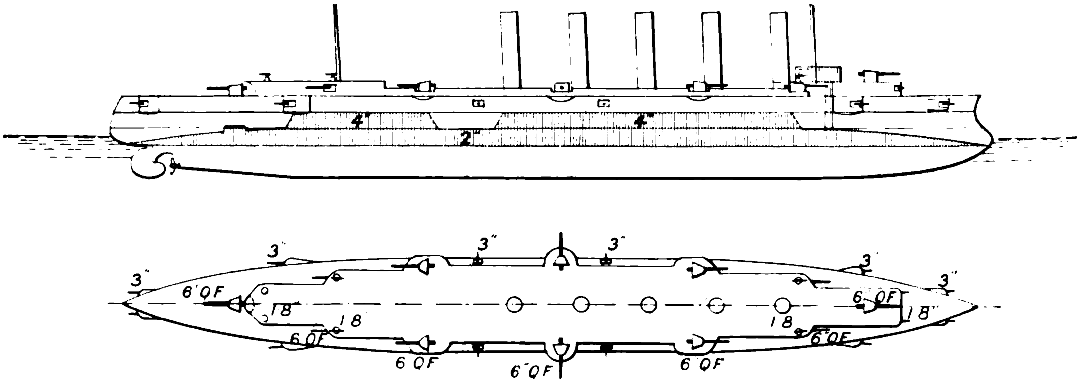
ARMOURED CRUISER.



See page 251.

CRUISER.

"Askold"



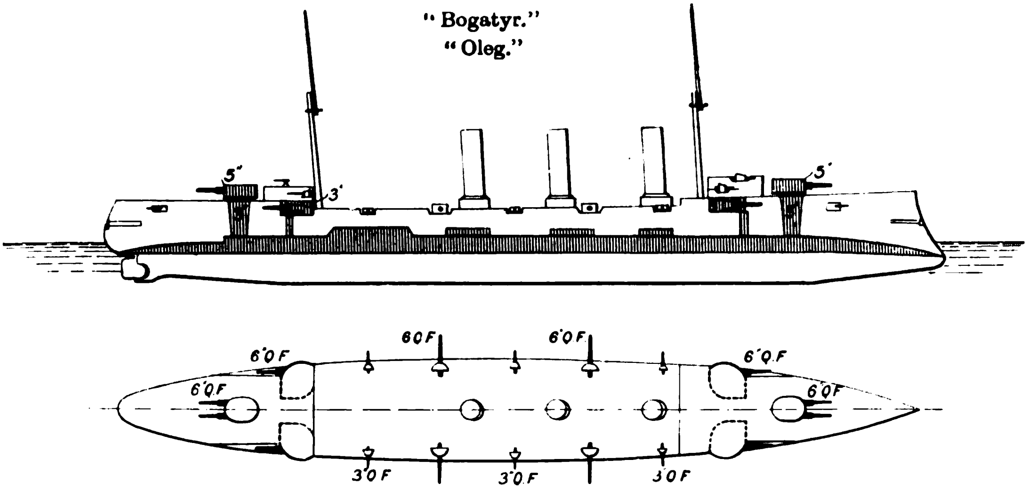
See page 252.

Plate 58.

RUSSIA.

CRUISERS

"Bogatyr."
"Oleg."

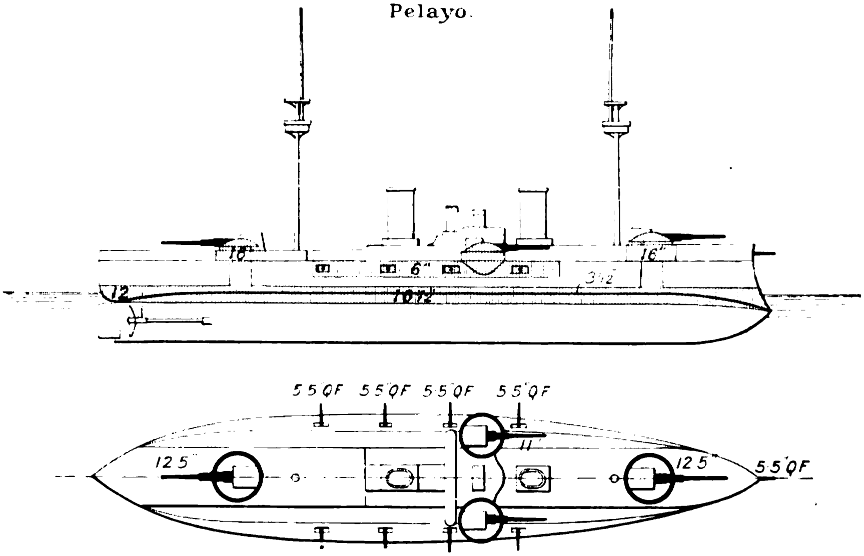


See page 252.

SPAIN.

BATTLESHIP.

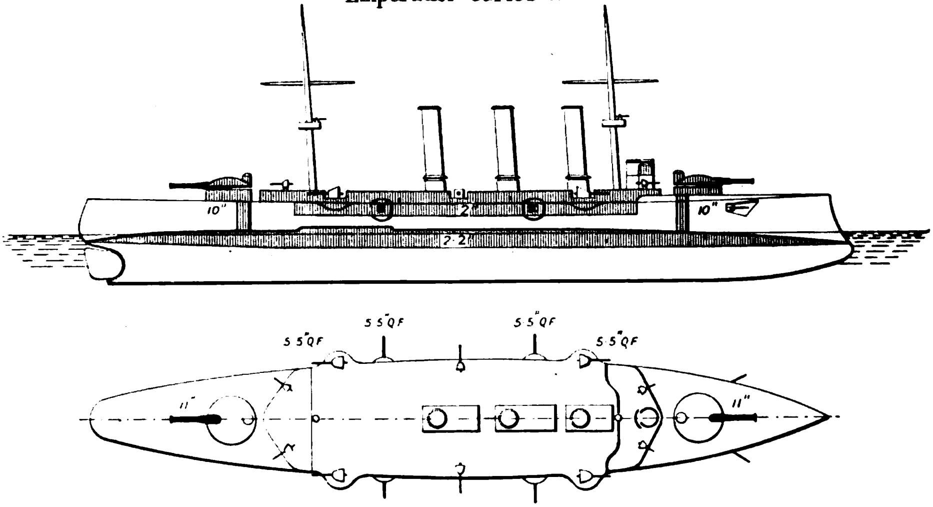
Pelayo.



See page 255.

ARMOURED CRUISER.

Emperador Carlos V.



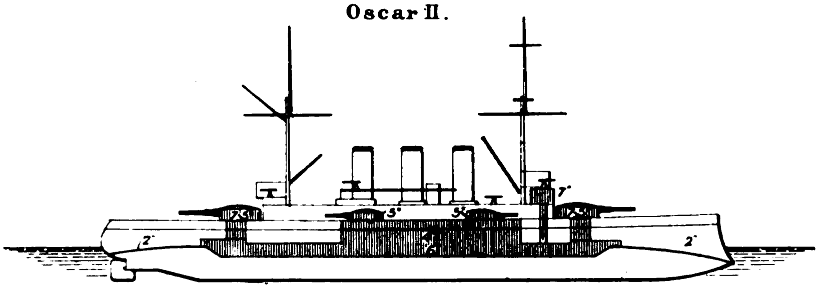
See page 255.

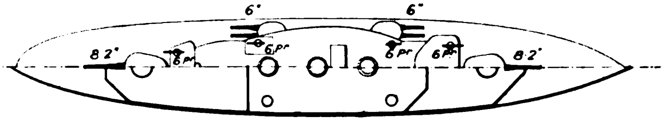
PLATE 60.

SWEDEN.

BATTLESHIP.

Oscar II.

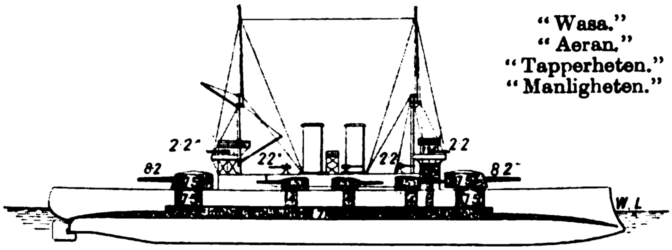


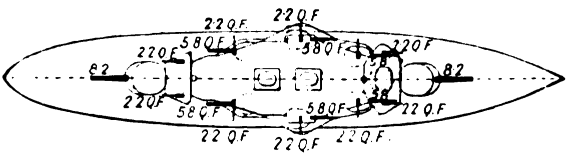


See page 257.

COAST DEFENCE SHIPS.

"Wasa."
"Aeran."
"Tapperheten."
"Manligheten."



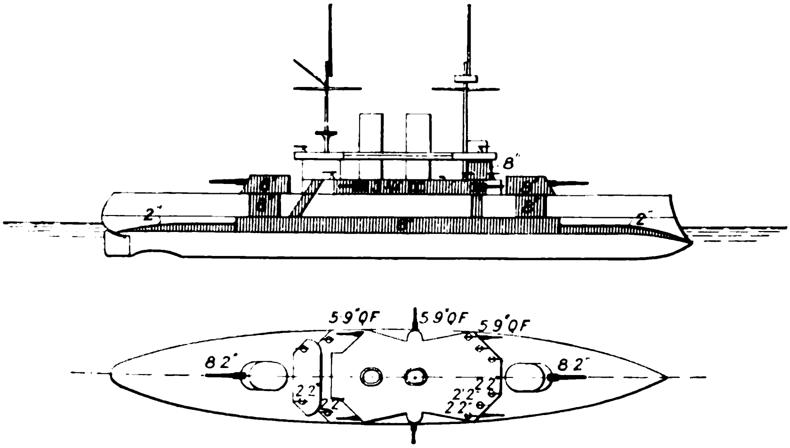


See page 257.

SWEDEN.

COAST DEFENCE SHIP.

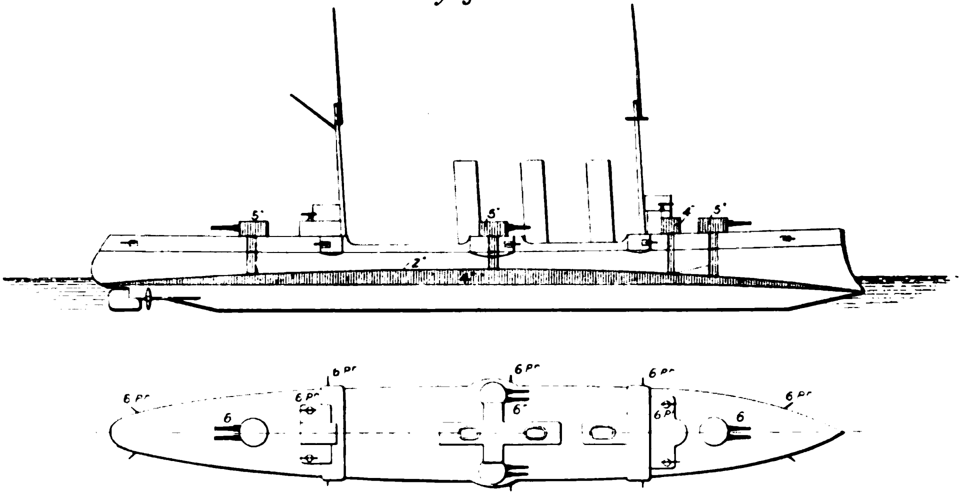
"Dristigheten"



See page 257.

ARMOURED CRUISER.

Fylgia.



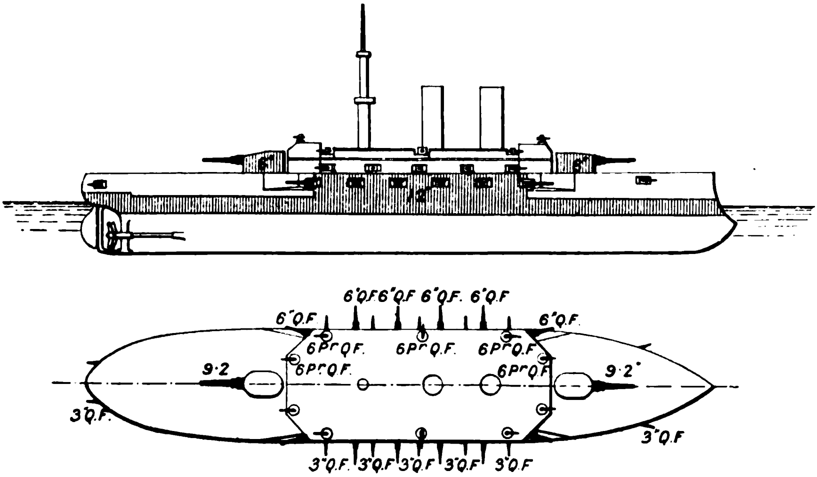
See page 257.

Plate 62.

TURKEY.

BATTLESHIP.

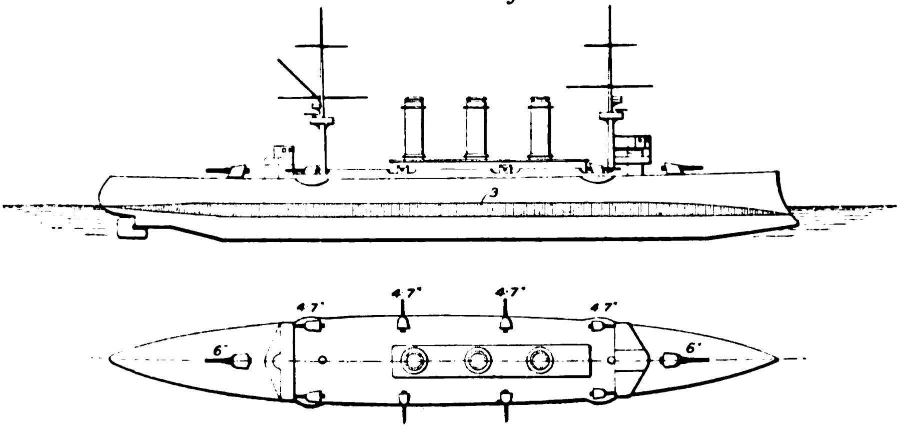
Messoudieh.



See page 259.

CRUISERS.

Abdul Hamid.
Abdul Medjid.



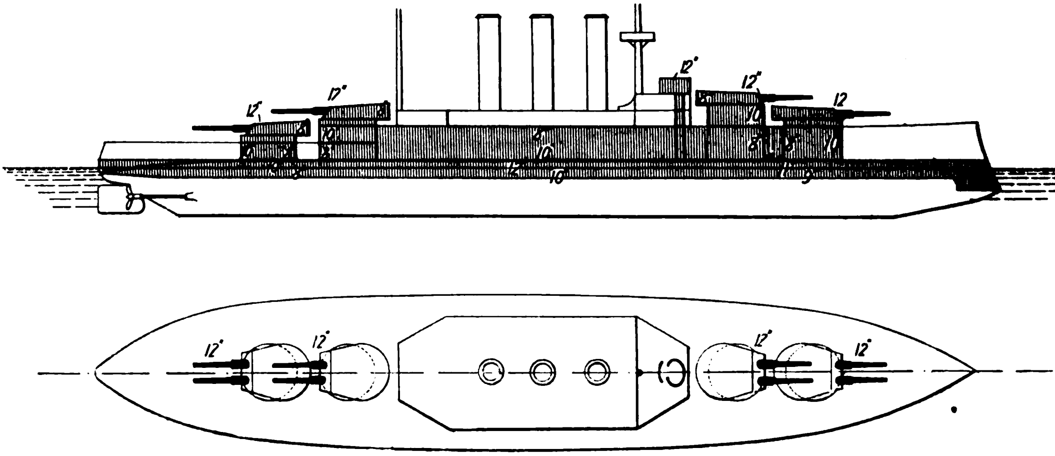
See page 259.

PLATE 63.

UNITED STATES.

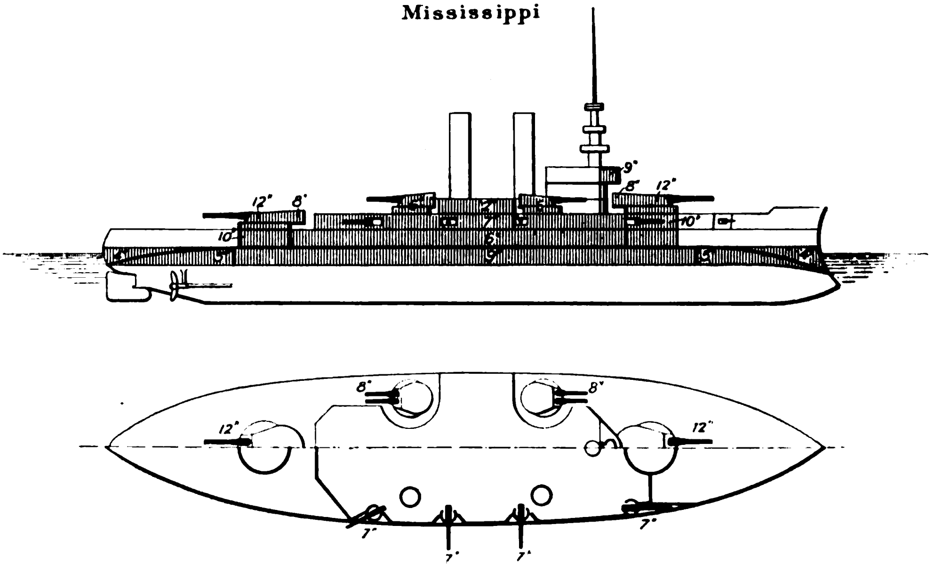
BATTLESHIPS.

Michigan
South Carolina



See page 261.

Idaho
Mississippi

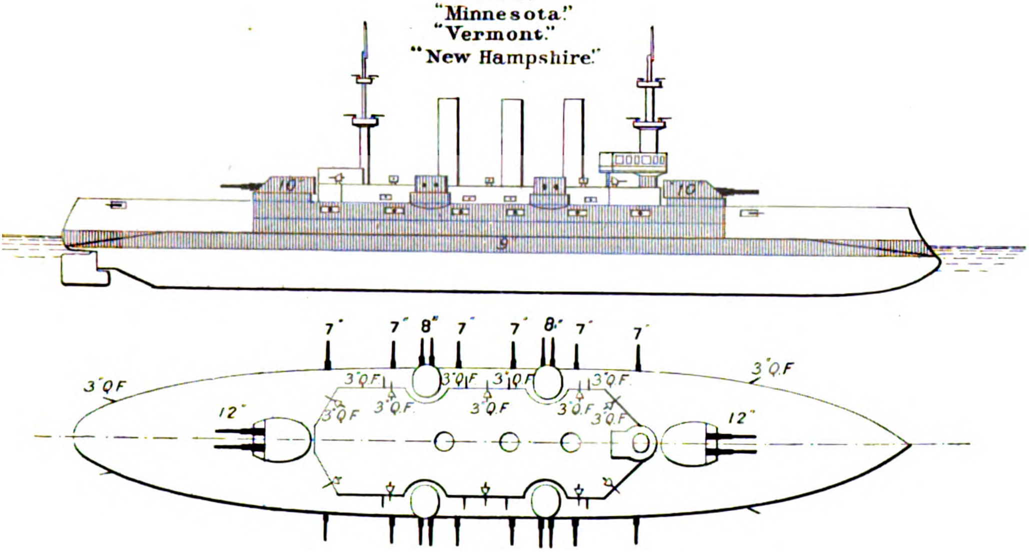


See page 260.

UNITED STATES.

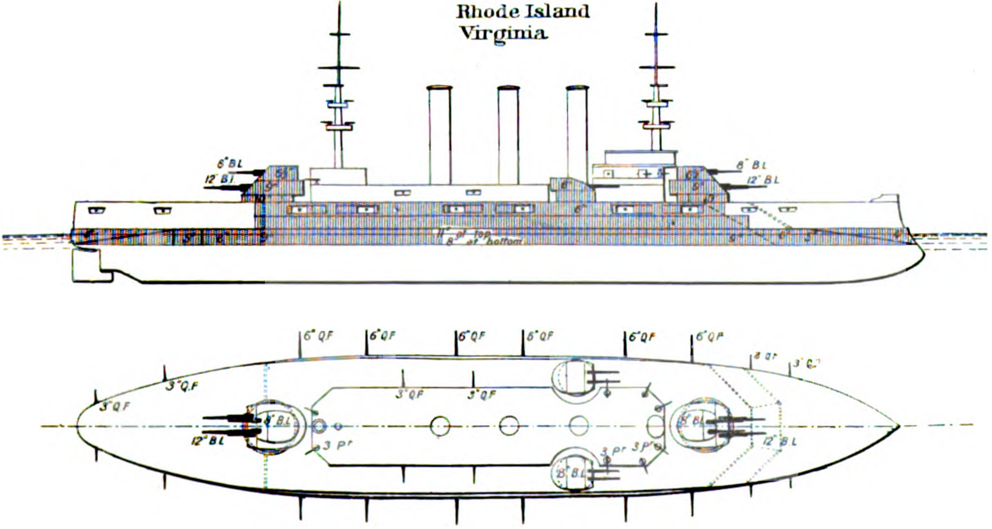
BATTLESHIPS.

"Connecticut."
"Louisiana."
"Kansas."
"Minnesota."
"Vermont."
"New Hampshire."



See page 260.

Georgia
Nebraska
New Jersey
Rhode Island
Virginia



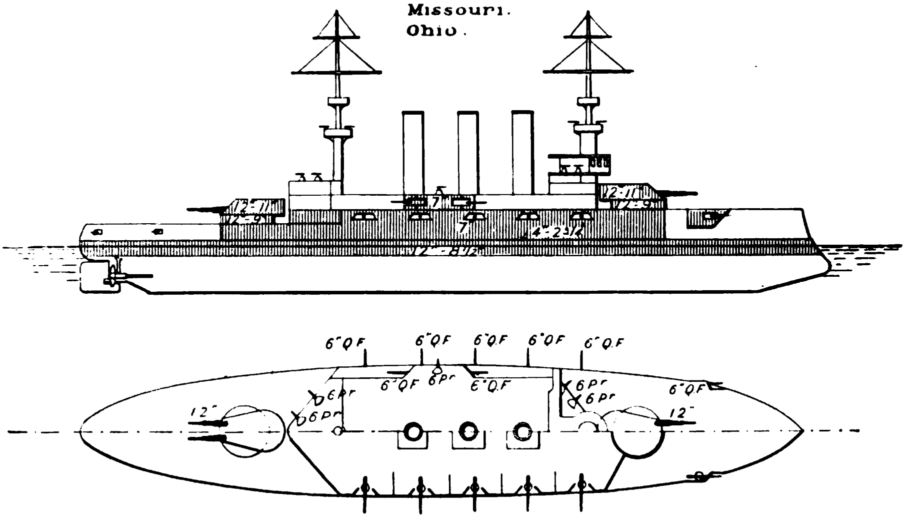
See page 260.

PLATE 65.

UNITED STATES.

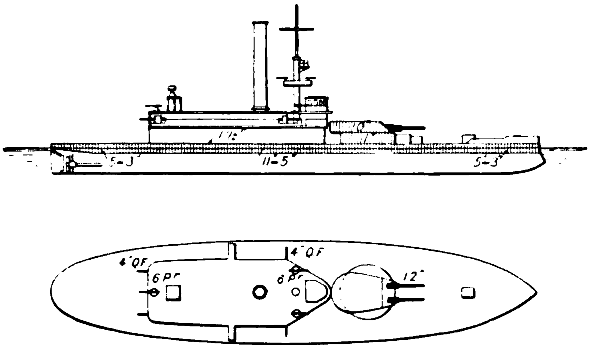
BATTLESHIPS.

Maine
Missouri.
Ohio.



See page 261.

Florida.
Nevada.
Wyoming.
Arkansas.

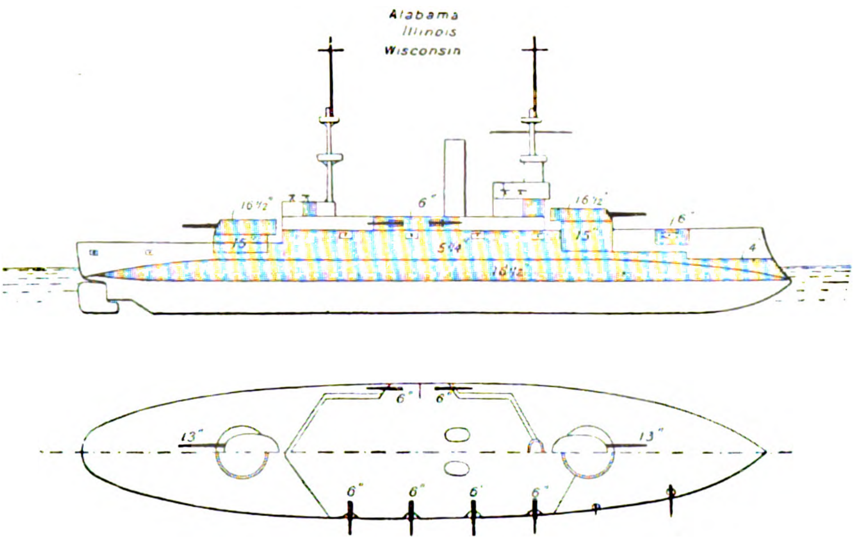


See page 260.

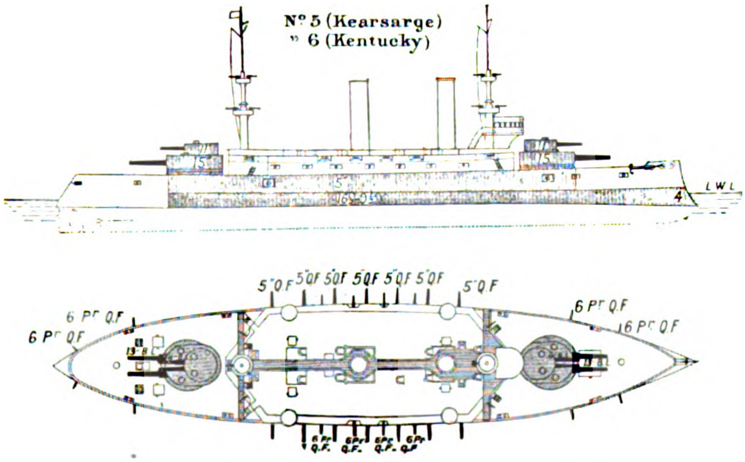
PLATE 66.

UNITED STATES.

BATTLESHIPS.



See page 260.

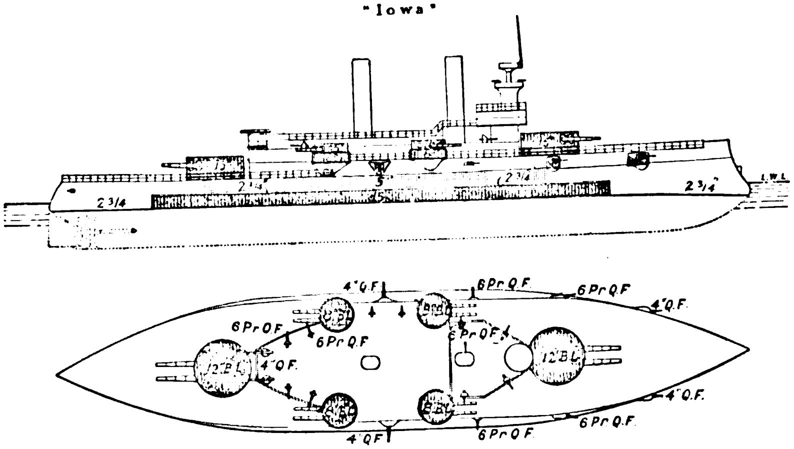


See page 261.

UNITED STATES.

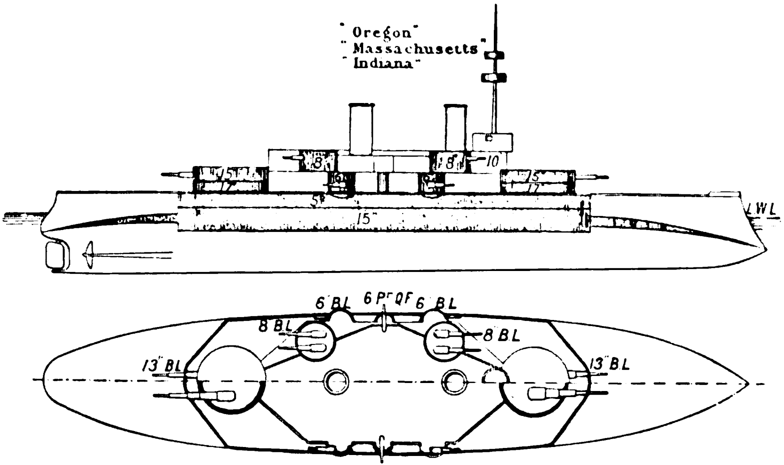
BATTLESHIPS.

"Iowa"



See page 260.

"Oregon"
"Massachusetts"
"Indiana"

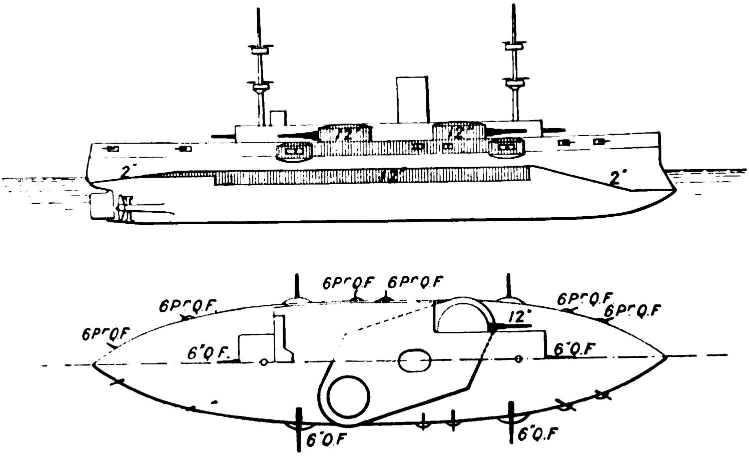


See page 262.

UNITED STATES.

BATTLESHIPS.

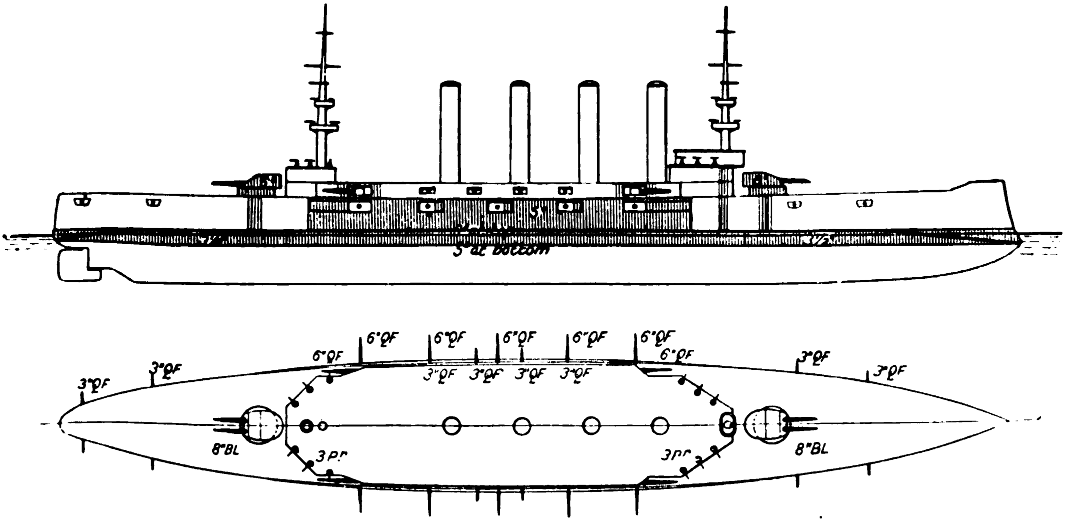
Texas



See page 262.

ARMOURED CRUISERS.

California.
Pennsylvania.
West Virginia
Colorado
Maryland
South Dakota

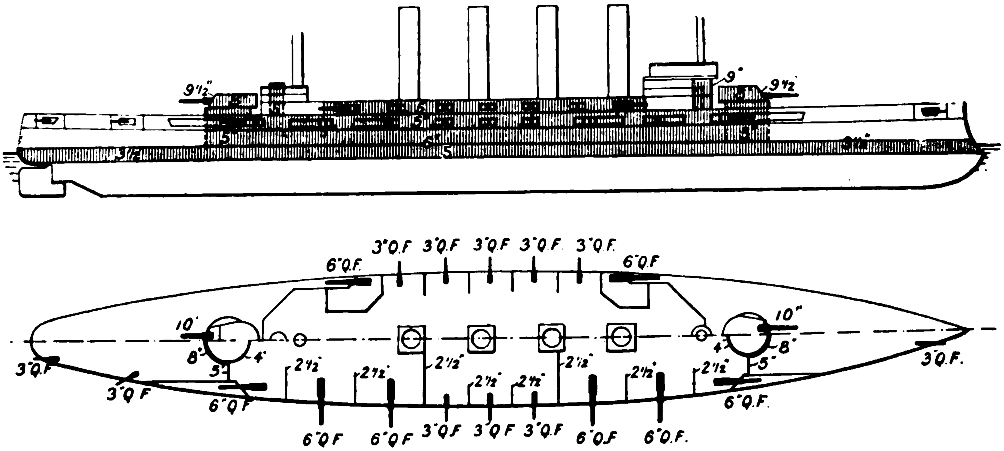


See page 260.

UNITED STATES.

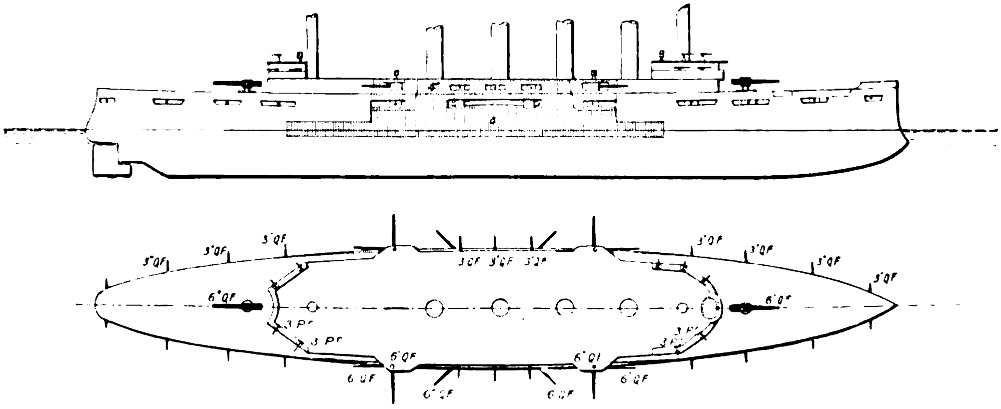
ARMOURED CRUISERS.

Montana. **Washington.**
North Carolina. **Tennessee.**



See page 261.

Charleston.
Milwaukee.
St. Louis

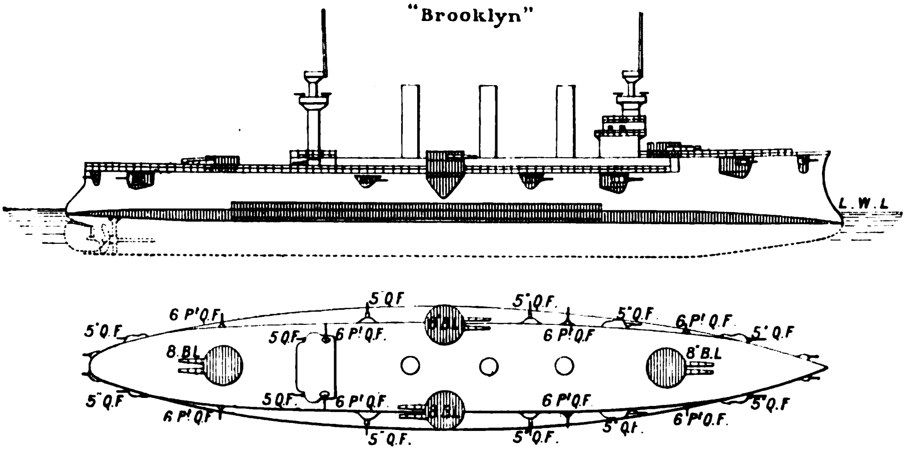


See page 260.

UNITED STATES.

ARMOURED CRUISER.

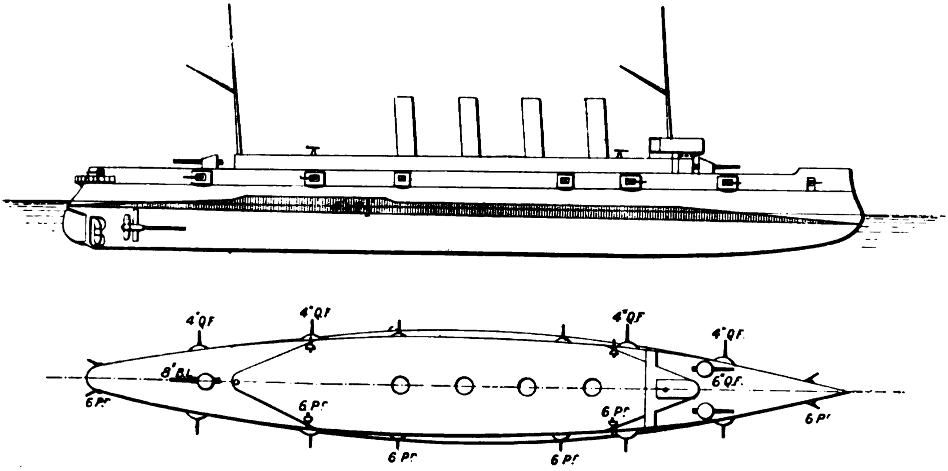
"Brooklyn"



See page 260.

CRUISERS.

Columbia.
Minneapolis



Note.- *Minneapolis has only two funnels.*

See page 263.

PART III.

STATISTICS, OFFICIAL STATEMENTS AND PAPERS.

First Lord's Statement explanatory of Navy Estimates, 1907-8.

THE Estimates presented to Parliament show a reduction of 1000 men, from 129,000 in 1906–1907 to 128,000 in 1907–1908, and, as I explain below, a reduction of £1,427,091, from £31,869,500 to £30,442,409.

The Vote for Works must be dealt with separately in the consideration of this year's Estimates, because a new policy has been adopted with regard to them. It has been resolved that there shall be no more Loan Bills to complete the large works authorised under the series of Works Loan Acts ending in 1905, but that an expenditure under the heads there detailed shall be charged on the Votes of each year. The estimate for works scheduled in the Loan Act of 1905 has been carefully reviewed with the object of reducing it to the lowest limit consistent with the requirements of the Service. Certain items of works not actually begun have been struck out. Some of them may eventually require to be carried out, and will then be considered for future inclusion in the Works Vote.

	£
The aggregate of Estimates for Works provided for in the Loan as shown in the Act of 1905 is	32,206,933
This it has been found possible to reduce to	29,840,000
A reduction of . .	£2,366,933

Of the funds authorised by Loan Acts already passed, about £1,916,000 will still be available on the 1st April, 1907. With the objects of completing as many Loan Works as possible out of Loan Funds, and of affording some relief to the Ordinary Estimates of 1908–9, it is proposed that this balance should be thus approximately distributed:—

	£
In 1907-8	1,478,000
In 1908-9	438,000

The total expenditure for works, including a charge for machinery hitherto met by loan, will stand thus for 1907-8 :—

	£
For works to be paid for out of money already provided by loan . . .	1,478,000
Annuity in repayment of loans, including an increase of £120,093 . . .	1,214,402
Works, machinery, &c., hitherto provided by loan	977,091
Ordinary works and services . .	673,173
	£4,342,666

The Admiralty have thus to bear this year an increase of £120,000 on annuity to repay loans, and £977,000 to pay for works, a charge which, until this year, was found from money specially borrowed under the Loan Acts which sanctioned them. While, therefore, the total Estimate of £31,419,500, compared with last year's total of £31,869,500, shows a reduction of only £450,000, the actual reduction the Board of Admiralty have been able to effect in their Estimate for Naval expenditure for the coming financial year amounts to £1,427,091.

New construction for the year will cost £8,100,000 as against £9,235,000 for 1906-7, the corresponding reduction on the Ordnance Vote being £497,500.

Administration.

The changes in the conduct of business at the Dockyards, introduced 18 months ago, have worked smoothly and well, and I think the nation has now every reason to be satisfied that the administration of its Dockyard work is conducted in a business-like and practical manner.

A reorganisation has been effected whereby the office of Chaplain of the Fleet is again combined with that of Chaplain of Greenwich Hospital, and the work of Inspector of Naval Schools, hitherto performed by the Chaplain of the Fleet, has been transferred to the Director of Naval Education.

On the retirement of Sir Henry Pilkington, under whose able charge the vast series of Loan Works has been carried out during the past 12 years, the Director of Works has been invested with the additional office of Civil Engineer-in-Chief of the Loan Works, and has amalgamated, for the period remaining for their completion, the Works Loan Department with his own.

The Admiralty has suffered during the year, and has to contemplate in the near future serious loss among its highest officers. Sir Gordon Miller, Accountant-General of the Navy, died suddenly in his room at the office, and the Admiralty has to mourn the loss of a most energetic and capable public servant. Sir David Gill, Astronomer at the Cape, has just retired after a service under the Admiralty of 28 years, during which he has made himself a reputation second to none in the scientific and astronomical world, and has brought the Observatory at the Cape to a condition of efficiency which can hardly be surpassed. The close of the present financial year coincides with the retirement, under the age limit, of Sir Evan MacGregor, G.C.B., Permanent Secretary at the Admiralty under eight Administrations, after 47 years' service in the Admiralty and 23 years as Permanent Secretary. To the Department and the Service Sir Evan MacGregor's name has long been a household word, and he will, I am sure, carry into his retirement the best wishes of all who have been his colleagues and subordinates during his long and distinguished period of public service.

A difficulty arose early in the year owing to the interference caused by the London County Council Electric Generating Station at Greenwich with the Royal Observatory. After considerable discussion, a joint committee, presided over by Lord Rosse, and containing representatives from the Admiralty (Dr. J. A. Ewing, Director of Naval Education) and from the London County Council (Sir Benjamin Baker, K.C.B.), was appointed to investigate the matter, and their report has just been presented to Parliament. The thanks of the Government are due to the committee for their labours and for the suggestions made by them to alleviate the difficulties arising from vibration, and for minimising the interference to observations from vapour issuing from the chimneys. The Admiralty are prepared to accept the recommendations of the committee as satisfactorily meeting the present needs of the Observatory, provided that they are faithfully carried into effect in the working of the London County Council electrical installation at Greenwich.

Personnel.

The changes in the establishment of the War Course College, which have been in progress during the past year, were completed in November, 1906, by the commissioning of H.M.S. Terpsichore at Portsmouth as the headquarters of the War Course College, in command of Captain E. J. W. Slade, M.V.O., R.N., under whose superintendence the courses had previously been conducted. The war courses had been started earlier in the year at the port, in the building which had been at one time the School of Naval Architecture and which required only small structural alterations in order to adapt it to its new purpose. The War Course College, as now constituted, will be in the same position as the gunnery and torpedo establishments, and will rank among the Fleet services and no longer among the purely educational services with which it was at first associated. In placing the headquarters of the War Course College at Portsmouth, care has been taken to provide for the continuance of modified courses at Devonport and Chatham, where lectures have been given on strategy, tactics, naval history, and international law and modern improvements in marine engineering, besides other naval and military subjects. One full course was held last year at Portsmouth, which was attended by 38 Naval, Marine, and Military officers. The course which commenced in October has been attended by 40 officers. The full war course at headquarters has been extended to four months, and lectures were given during the course on the following subjects :—Marine Engineering, Naval History, International Law, Tactics, Trade, Wireless Telegraphy, Organisation of Signal Stations, Armour Plates and Explosives, Telegraph Cables, Mining, Gun Mountings, Control of Fire and Effects of Fire Combined Operations and Coast Defence, Battle Practice.

Representations having been made that existing Engineer officers under the orders promulgated since 1902 have not been given certain advantages which they had been led to expect at the time the new scheme of entry and training was promulgated, and it being also desirable to ascertain whether further instructions are necessary with a view to the qualification of officers for duties with the Royal Marines under the new scheme, a committee consisting of Executive, Engineer and Marine officers has been appointed to consider the matter. Their enquiry has only just been completed, and their report has not yet been laid before the Board. It is not therefore possible to indicate the nature of their recommendations.

The education of Naval Cadets under the system introduced in 1903 is making satisfactory progress. The first batch of cadets will complete their educational course on shore, and leave Dartmouth for training in a sea-going cruiser after next summer term. The most recent reports from the officers and masters at Dartmouth confirm in a remarkable way the anticipations of the present method of selection of candidates, which has settled down from being a tentative experiment into a permanent system. The cost of the thorough education given at the two Naval Colleges obliges the Admiralty to call upon the parents for a substantial contribution towards it; but in the case of officers of the Navy and Army who can show that the fees paid are a serious burden, a large reduction is made in the charges. The question of finding means to extend this privilege of reduction of fees to such other parents as may need it deserves careful consideration. One Exhibition for this purpose has already been provided through the generosity of a private donor. Possibly County or other public authorities may be led to follow this example and that of the Argyll Fund, founded for the benefit of Scottish boys, and provide for naval cadets who belong to their several districts.

I have already stated that the number of men has been reduced by 1000. The present number of seamen borne is in excess of requirements, while the number of stokers is still less than is needed for manning the Fleet. The entries of boys have therefore been continued at the same reduced total as last year, viz.:—1500, and this has permitted of the entry of a large portion of the stokers required to make good the deficit. As the seamen drop to the required strength, the stokers will be increased. This process, however, takes time, as notwithstanding the popularity of the Royal Fleet Reserve, only a limited proportion of men can be allowed to take their transfer to the Reserve before the completion of their ordinary engagements.

As compared with last year there is really a rise in Vote 1 (Pay and Wages) of £175,500. Notwithstanding the reduction in numbers, this increase is inevitable and at the same time satisfactory, owing to the reduced force containing a larger proportion of mature men and higher paid ratings, and also to the fact that the effect of the grant in recent years of better pay and allowances is not felt all at once. Such increases in pay are on a gradual scale, and at present the general tendency to rise is not counterbalanced by the reduction in numbers of young and first entries. A new plan of issuing clothing in kind instead of a money gratuity to new entries has involved the transfer of a sum of £116,500 from Vote 1 to Vote 2 (Victualling and Clothing), and consequently the Estimates only show an increase of £59,000 in the actual Vote for Wages.

The question of rating, advancement, and conditions of service of Seamen and Petty Officers has been carefully reviewed during the year, and certain proposals, having for their principal object the improvement in the position and responsibility of the Petty Officer, are now under consideration with a view to their adoption in the course of the coming financial year. At the same time it is proposed to establish a new rating of Telegraphist for working the wireless telegraph instruments independently of the Signal branch, which has hitherto conducted those duties.

From the 1st April last a new system of training for the Royal Naval Reserve was introduced, its main features being the substitution of modern ships at the Home Ports for shore batteries as the place for carrying out drill and training. By the end of 1906 some 1300 men and 186 officers accepted service under the new system. Recruiting for the Royal Naval Reserve was reopened in November, and in the coming year it is proposed to enter 1000 seamen and stokers, 60 engine-room artificers, and 80 officers. The introduction of the gratuity of £50 after 20 years' service in lieu of pension at the age of 60 has been apparently much appreciated, as practically all the men who completed the necessary service since the 1st April have elected to take the gratuity. The Commanding Officers of His Majesty's ships in which the Royal Naval Reserve men have been embarked for training report satisfactorily on the men; 530 seamen and 230 stokers have been embarked for training since the 1st April, 1906, in addition to the 587 stokers who served during the manœuvres, some of whom elected to count this service in lieu of their biennial training.

In the spring of 1906 some 120 of the 590 men forming the Newfoundland Reserve visited England during an extended cruise on board three of His Majesty's ships. The most favourable impression was created by their general appearance, and the Commodore in command of the squadron reported in high terms as to their conduct and efficiency. Good reports are received from the Colonies of the other branches of the Naval Reserve there established; and the Royal Naval Volunteer Reserve at home continues to justify the high expectations which were formed of this body when first raised three years ago.

An inter-departmental conference is now in session to consider whether any modifications can be made in the present system of Revenue Protection and the use of the Coast Guard, with a view to reducing the cost falling upon Naval Votes. The conference has not yet concluded its deliberations, and any recommendations which may be made will receive careful consideration both from a naval manning point of view, and also from the point of view of ensuring that adequate provision is made for the life-saving services as well as revenue services.

As indicated in last year's Statement, the training of boy artificers and mechanicians has been reorganised on the new lines—the former has been concentrated at Portsmouth and Chatham, and the latter at Devonport. The placing of these training establishments under the control of an Inspecting Captain has been attended by good results, and there is every reason to believe that the scheme of training, now well established, will fulfil the expectations entertained by those who initiated the policy. Candidates of good qualifications are presenting themselves for training as mechanicians, and though a small proportion have had to be eliminated in the early stages of their training, the remainder have shown themselves fully competent to meet the demands of the instructors. It has not been possible yet to test the mechanicians who have been trained with a view to their undertaking duties in the engine room, as the men who were put through the new course of training have only just been drafted to sea-going ships. The same may be said of the boy artificers. Those first entered have only just completed their four years course, and arrangements are now being made for them to join ships for their first work as engine room artificers of the 5th class. With one or two exceptions they have passed out of the training establishments with credit.

During the past year an enquiry has been made into certain questions connected with canteens on board ship and the victualling of the Fleet. It is hoped that the result of this enquiry, when carried into effect in combination with the reforms now being carried out in the cookery arrangements of the Fleet, will remove, or at least greatly reduce, certain existing shortcomings.

I am glad to be able to report a very striking increase in the improvement already begun under former Administrations in the gunnery of the Fleet. In Battle Practice, by which the gunnery organisation of the ship as a whole is tested, and which is therefore the best criterion of efficiency, the average number of hits per ship in 1906 was practically double that of the previous year, although the conditions in the last year were considerably more difficult than before, the mean range being 1000 yards greater, and the time available for firing one minute less. In the Test of Gunlayers with heavy guns, which is a necessary preliminary to battle practice, but during which the efficiency of the gunlayers and guns' crews alone is tried, the average number of points obtained per man was 68·26 in 1905, as compared with 80·065 in 1906, or, comparing the percentage of hits to rounds fired, it was 56·58 against 71·12. In the Test of Gunlayers with light quick-firing guns the percentage of hits to rounds fired rose from 21·63 in 1905 to 34·53 in 1906. In the battle practice of the torpedo-boat destroyers there was a corresponding increase in efficiency, the percentage of hits to rounds fired being 20·02 in 1905 and 34·60 in 1906. It is particularly satisfactory that the improvement is general throughout the Fleet, and not by any means confined to a picked selection of crack ships. The greatest credit is due to all the officers and men who have worked together to produce this result.

SHIPBUILDING AND REPAIRS.

The new construction for the year will cost £8,100,000, as against £9,235,000 for 1906–7. It will include two or, unless an understanding between the naval powers be arrived at by the Hague Conference, three large armoured vessels of the Dreadnought type. They will be of slightly larger displacement than the Dreadnought, and full advantage will be taken of experience of the Dreadnought in carrying out the details of their construction, motive power, and armament. One fast unarmoured cruiser, five ocean-going destroyers, twelve first-class torpedo boats, and twelve submarine boats are also provided for.

£7,340,618 will be spent on the continuation of ships already begun; £759,382 in beginning new ships; of this £107,100 will be devoted to the fast unarmoured cruiser to be laid down at Pembroke, £307,482 on torpedo vessels and submarines, £344,800 on new large armoured vessels.

Between the 1st April, 1906, and the 31st March, 1907, the following ships will have been completed and become available for service:—

4 *Battleships:* Africa, Britannia, Hibernia, Dreadnought.

3 *Armoured Cruisers:* Achilles, Cochrane, Natal.

7 *First-Class Torpedo Boats,* 11 *Submarines, Floating Dock* for Submarines.

On the 1st April, 1907, there will be under construction: 5 battleships, 7 armoured cruisers, 8 ocean-going torpedo-boat destroyers, 17 first-class torpedo boats, 12 submarines, 1 Royal yacht (Alexandra, expected to be ready in September next).

The strike on the Clyde will probably cause some delay in the completion of ships building in yards in that district.

H.M.S. Dreadnought was commissioned on the 11th December, 1906, 14 months after being first laid down. This remarkable achievement in shipbuilding reflects the greatest credit on all who were connected with the work, both at the Admiralty and at Portsmouth Dockyard. A certain amount of overtime had to be worked in order to produce this record, but there is no occasion to repeat it, and I do not intend to permit overtime to be worked in the yards in future, except in cases of pressing necessity, and then sanction on each occasion must be specially obtained.

The trials of the Dreadnought have given the highest satisfaction; she has completed more than 7000 miles at sea, and her passage from Gibraltar to Trinidad, a distance of 3400 miles, was accomplished at an average rate exceeding 17 knots an hour.

A revised arrangement of working hours was adopted experimentally in the Home Dockyards on the 2nd July last. It had been the practice to work an average 48-hour week, the working week ranging from 41¼ hours in the winter to 50 hours in summer. The revised arrangement, which became a practical possibility with the introduction in the Dockyards of electric lighting on a general scale, gives an uniform week of 48 hours throughout the year. On the first four days of the week the length of the working day is 8½ hours, on Friday 9 hours, and on Saturdays 5 hours. With the change to uniform hours, hourly rates became practicable as the unit of pay and have been introduced, leading to much simplification in accounting. The new time table, while popular with the employees, is not unfavourable to the Crown and, subject to some slight variations which actual experience has shown to be desirable, will shortly be established as a permanent arrangement.

Opportunity was taken, during the Board of Admiralty's official visits to the Home Ports in 1906, to continue the practice adopted by former Boards of hearing petitions from the Dockyard workmen, both personal cases and representations from the various trades and grades employed. Each trade was allowed to send two delegates, one of whom might be an official of the corresponding trade union if the men so desired. My colleagues and I devoted a great deal of time to these personal interviews with the men, without the intervention of their local superior officers, and after careful subsequent examination of the statements made to us, we were able to recommend increases of wages amounting to some £60,000 a year, besides other concessions which did not involve expenditure. I certainly intend to continue this system of personal interviews between the members of the Board of Admiralty and the employees in the Dockyards.

I may here mention that a working arrangement has been come to for the investigation of alleged breaches of the Fair Wages Clause in Admiralty contracts, whereby any trade union which wishes to make a complaint against a contractor communicates with the Secretary of the Trades Union Congress Parliamentary Committee. If further enquiry is needed, he consults the Admiralty, who take whatever steps after examination may prove necessary.

The greater efficiency of our ships and their better state of repair since the introduction of the system of nucleus crews has been shown in a remarkable degree by the large proportion of ships now available for service in comparison with what was the case three years ago. In illustration of this change I give a few figures which were drawn up at my direction last month to show the relative condition of our various classes of ships at the date of my request and three years ago:—

In the third week of January, 1904, out of sixty battleships thirty-eight were unavailable owing to need for repairs, or 63 per cent. of the whole. On 21st January, 1907, out of fifty-one battleships only eight, or 16 per cent., were unavailable. Of armoured cruisers, in the third week of January, 1904, of twenty-four vessels eight were unavailable, 32 per cent.; on the 21st January, 1907, out of twenty-eight vessels seven were unavailable, or 25 per cent. Of eighty-four unarmoured vessels, in the third week of January, 1904, forty-four were unavailable, 52 per cent.; on 21st January, 1907, of seventy-six unarmoured vessels seventeen were unavailable, 22½ per cent. Of 110 destroyers in the third week of January, 1904, sixty-one were unavailable, or 56 per cent.; on 21st January, 1907, out of 143 destroyers twenty-nine were unavailable, 19 per cent.

Large repairs and refits are of course necessary from time to time, but there is no doubt that a great saving has been effected by keeping all our fighting ships manned with either whole or part of their complements on board.

✓ Arrangements have been made to transfer the Naval Yards at Halifax and Esquimalt to the Dominion Government, subject to the condition that they shall be available for the repair of His Majesty's ships, so far as their facilities admit, and that the Admiralty shall be free to resume possession at any time when naval interests require it. These conditions have been accepted generally by the Canadian Government, who are now in actual possession of Halifax Yard. The detailed arrangements necessitated by the transfer are in process of adjustment between the Admiralty and the Dominion Government.

Distribution of the Fleet.

A further development of the redistribution of the Fleet, in continuance of the policy instituted under Lord Selborne, and explained by him in his Memorandum of 6th December, 1904, has recently been resolved upon by the Board of Admiralty. The redistribution of 1904 permitted of a sufficient concentration of *personnel* to man all fighting ships in Home waters with nucleus crews, amounting to two-fifths of their full complement, and also to provide on shore at each Home Port a balance of men always ready to man two armoured ships. The further distribution of naval strength now resolved upon will provide a considerable increase in all nucleus crews of ships in the first fighting line, and the complete manning of squadrons of six battleships and six armoured cruisers which will not leave Home waters. These twelve ships, together ✓ with forty-eight destroyers, with full crews, some small cruisers and the requisite auxiliaries will be concentrated at the Nore, and will do their practices and sea service in the North Sea, and will be constantly ready for any emergency. The nucleus crew system will thus be maintained and strengthened in the constitution of the Home Fleet. The crews of the vessels at the other ports must fluctuate, according to the demands made for the provision of foreign reliefs and for other causes, but will not, except in the small cruisers, fall below three-fifths; more often there will be an excess over this number.

The term "in reserve" will no longer be applicable; all sea-going fighting vessels in the Home Ports, not belonging to other fleets or squadrons or appropriated for training purposes or local defence, belong to the Home Fleet and will be able to complete to full crew at a few hours' notice. Certain vessels of older date have hitherto been described as "in special reserve;" in future such vessels will be kept fit for service and provided with crews sufficient to keep their machinery in good order and the ships ready for the duties required of them. I should explain that the Home Fleet is still in process of development, and that it will be some time before it can reach its full strength.

As the fleets at home will continue to be combined for war under the orders of the Commander-in-Chief of the Channel Fleet, the Channel, Atlantic, and Home Fleets will carry out periodic peace exercises together under his command at such times and places as the Admiralty may direct. As indicated in the Admiralty minute of October 23rd, 1906, the Fifth Cruiser Squadron (the Nore Division) of armoured cruisers will be detached for exercises with the Channel and other Fleets as desirable.

Considerable administrative improvement is expected to result from the organisation of the Home Fleet. It has been necessary heretofore to deal separately with the distribution and arrangement of each of the existing Reserve Divisions. The position of the Rear Admiral in Command of Torpedo Craft and Submarines has been somewhat anomalous, inasmuch as he has been under the orders of more than one senior officer. The administrative command of all these divisions and vessels being now centralised in the Commander-in-Chief of the Home Fleet, a far better organisation should be achieved than has been possible with a divided responsibility. His headquarters are at Sheerness, and he will occupy the house vacated by the transfer of the residence of the Commander-in-Chief at the Nore from Sheerness to Chatham.

The status of the Commander-in-Chief of the Home Fleet and that of the Flag Officers and vessels under his orders will be similar to that of the Flag Officers and vessels of the Channel and Atlantic Fleets when they visit the Home Ports; that is to say, for the time being they come under the command of the senior officer present, but that senior officer will not interfere with the administration and orders of the officers in command. The Home Fleet in no way interferes with the *rôle* of the Channel and Atlantic Fleets, except in the event of a totally unforeseen outbreak of war during their absence from Home waters; they will still occupy the principal fighting position.

The First Squadron of armoured cruisers under the command of Rear-Admiral G. Neville, C.V.O., will visit Hampton Roads in the early summer on the occasion of the opening of the Jamestown Exhibition by the President of the United States of America.

The Fleet at sea will begin the new year without its most distinguished and capable figure through the termination of the appointment as Commander-in-Chief of the Channel Fleet of Admiral Sir Arthur Wilson, V.C., G.C.B., one of the ablest and most trusted commanders the Navy has had in recent years. Sir Arthur Wilson has a fine record of service as a most efficient officer at sea, in the battlefield on shore, as an administrator at the Admiralty, where he was Controller of the Navy, and finally as the Commander-in-Chief for six years of the most important of His Majesty's Fleets. In spite of the sound and wise demand for young flag officers, there are still occasions when the whole Navy regrets the inevitable operation of the age rule, and it is a notable one indeed when Sir Arthur Wilson brings to a close his last command afloat.

I append the usual statement of work done in the Department.

TWEEDMOUTH.

23rd February, 1907.

STATEMENT OF WORK, 1907-8, &c.

CHANGES IN THE COMPOSITION OF THE FLEETS.

Mediterranean.

The Battleship Squadron, formerly consisting of eight ships of the Formidable class, has been reduced by the recent withdrawal of H.M.S. Bulwark. The London will also be withdrawn after the Lagos manœuvres, and with the Bulwark will join the Home Fleet.

The same three second-class cruisers of the Talbot class have remained attached to the Battle Squadron.

In the Third Cruiser Squadron the Bacchante replaced the Leviathan as flagship.

North America and West Indies. ✓

(Fourth Cruiser Squadron.)

In this squadron the armoured cruisers Euryalus, Hogue, and Sutlej have replaced the four protected cruisers of the Edgar class. The Indefatigable has been employed continuously on service in the West Indies. The protected cruiser Brilliant was employed during the fishery season in Newfoundland waters; after a winter visit to the West Indies she is carrying out a cruise down the east coast of South America, returning to Newfoundland in May.

China.

The six cruisers in the China Squadron have remained unaltered, with the exception of the Monmouth, which replaced the Andromeda. The Bedford is about to relieve the Diadem.

Two sloops, three gunboats, and ten shallow draught steamers have been engaged on river work.

Australia.

No alteration has taken place in this squadron.

The Cambrian, accompanied by the Flora from the China station, cruised on the west coast of North and South America and amongst the Pacific Islands during the spring and summer of 1906.

East Indies and the Cape of Good Hope.

The only change in the East Indies Squadron has been the relief of the Fox by the Highflyer. The Hyacinth is about to relieve the Hermes as flagship, and the Hermes will relieve the Crescent as flagship of the Cape Squadron. The Terpsichore has returned from the Cape, without relief.

The East Indies Squadron will shortly be placed under the command of a Commodore First Class, and that officer and the East Indies station will come in war time under the command of the Commander-in-Chief of the Cape station.

Atlantic Fleet, including Second Cruiser Squadron.

Throughout the year the ships of the Majestic class have been gradually withdrawn from this Fleet and replaced by the new ships of the King Edward VII. class as they were completed. It is now intended to transfer the eight ships of the King Edward VII. class to the Channel Fleet and to reconstitute the Battle Squadron of the Atlantic Fleet with the five ships of the Duncan class (now in the Channel Fleet) and the Albion.

The three smaller cruisers attached to this squadron have not changed.

The Second Cruiser Squadron affiliated to the Atlantic Fleet has been reduced from six ships to four, two cruisers having been withdrawn for service in the Home Fleet.

Channel Fleet, including First Cruiser Squadron.

In June last the Montagu attached to this Fleet was wrecked off Lundy Island. The remaining sixteen ships, of which the Battle Squadron has been composed, have throughout the year belonged to the Duncan, Canopus, Majestic, and Swiftsure classes. It is intended to reduce the number of battleships to fourteen and to alter the composition of the squadron by transferring to it the eight ships of the new King Edward VII. class, the six other ships being the Swiftsure, Triumph, Illustrious, Jupiter, Ocean, and Vengeance.

The three cruisers attached to the Battle Squadron have remained unchanged.

The First Cruiser Squadron has remained unaltered, but it will shortly be reduced from six to four armoured cruisers.

Torpedo Craft in Home Waters.

Three scouts have been added for service with the three permanent destroyer flotillas, and the number of destroyers in each flotilla has been brought up to twelve boats worked in three divisions of four boats each. From the 5th March, another flotilla of twelve destroyers with a scout flying the broad pennant of a Commodore (D) will be added to the permanent flotillas. The Sapphire has been retained as flagship and parent ship for these destroyers, and H.M.S. Tyne has been detailed in addition to H.M.S. Sapphire II. as a depôt ship. The first four of the new type of torpedo boat (formerly called coastal destroyers) have been placed under the orders of Admiral (D) for experiment. The destroyers at the three Home Ports have been reorganised. A depôt ship has been added to each port, and two scouts have been added for service with the destroyer flotilla at Portsmouth and the Nore, and one scout with the Devonport flotilla. The flotillas at each of the three ports consist of twenty-four destroyers (with a spare boat), worked in six divisions of four boats each, and the boats have been arranged homogeneously to the greatest possible extent.

Special attention has been given to the organisation of the submarine craft, the numbers of which have been considerably increased.

The Admiral (D) who is in command of all destroyer craft and submarine craft in Home waters will be placed under the orders of the Commander-in-Chief of the Home Fleet.

Home Fleet.

The Home Fleet will be constituted by April next as follows:—

BATTLESHIPS.

Nore.—Dreadnought (flag of Commander-in-Chief), Bulwark (flag of rear-admiral), London, Magnificent, Majestic, Victorious, with full complement.

Portsmouth.—Prince George (flag of rear-admiral), Glory, Goliath, Canopus.

Devonport.—Empress of India (flag of rear-admiral) (to be replaced by Cæsar in May), Mars, Hannibal.

FIRST-CLASS CRUISERS.

Nore.—(5th Cruiser Squadron): Leviathan (flag of rear-admiral), Cochrane, Duke of Edinburgh, Achilles, Natal, Warrior (to join in May), with full complement.

Portsmouth. — Cressy, Berwick, Essex, Argonaut, Terrible, Ariadne, Diadem, Spartiate (to join in May).

Devonport.—Carnarvon, Donegal, Cumberland, Cornwall, Niobe, Europa, Andromeda, Amphitrite.

SMALLER CRUISERS.

Nore.—Dido, Vindictive, Charybdis.

Portsmouth.—Gladiator, Eclipse, Fox.

Devonport.—Doris.

Special Service vessels, torpedo craft and Fleet auxiliaries are additional to this list.

Coast Guard and Fishing Service Vessels.

The Argus, Thrush, Halcyon, and Leda have been employed during the year in the North Sea on fishing duties.

The Julia has been in the English Channel; the Ringdove, Daisy, and Hussar in Scottish waters; and the Skipjack on the south-west coast of Ireland.

The Squirrel has been mainly in the North Sea, and for part of the year in the Moray Firth and in the south-east district of the English Channel.

The Fanny has been partly in the English Channel and partly on the south-west coast of Ireland.

Special Visits.

In July H.M.S. Antrim visited Antwerp.

In August the Particular Service Squadron visited Sweden and Norway.

H.M.S. Dominion visited Canada in August and September.

Manœuvres.

Torpedo craft exercises were carried out in Home waters in January and February, 1906.

Four scouts, sixty-four destroyers, and forty-two torpedo boats took part under the directions of the Admiral (D).

Combined strategical manœuvres were carried out at Lagos from the 13th February to the 1st of March, 1906, by the Channel, Mediterranean, and Atlantic Fleets and First, Second, and Third Cruiser Squadrons, making together a force of twenty-nine battleships and eighteen cruisers.

The Grand Manœuvres, from 12th June to 2nd July, consisted of three periods, viz.:—

(1) Test of arrangements for mobilisation in sudden emergency and of preparedness and safety of the Home Ports against attack.

(2) Period of tactical exercises.

(3) Test of arrangements for the defence of trade against a hostile attack.

With a few exceptions, the whole of the Channel, Mediterranean, Atlantic Fleets, the four Cruiser Squadrons and the Reserve Divisions including destroyers, torpedo boats and submarines took part, making a total of 329 vessels.

Combined exercises of the Channel, Mediterranean and Atlantic Fleets, and the Four Cruiser Squadrons have again taken place at Lagos in February, 1907.

PERSONNEL.

Officers.

The position of signalling officers has been defined by the institution of regular courses in the signal school, and officers who qualify will be distinguished by the placing of a symbol against their names in the Navy List. In the case of large fleets an allowance will be payable under certain conditions to an officer who may not combine signalling duties with those of Flag Lieutenant.

The scale of allowances to specialist officers serving in flag ships has been revised, being placed on a uniform system, and at the same time the Executive Commander has been included among the officers entitled to an allowance.

The regulations governing the service of Chaplains, R.N., have been further revised, and a rule has been laid down that no candidate should be placed on the established list without a preliminary period of four years' service in the Fleet. Gratuities on a certain fixed scale are payable to Chaplains, who withdraw after short periods of service.

The organisation of the new system of War Courses has been further matured, and the building in Portsmouth Dockyard, which at one time was used as the School of Naval Architecture, has been now made the headquarters of the War Course College. A school ship has been attached to the college with a view to the better carrying out of the system of instruction pursued in the War Courses.

An inquiry was made last year into the best means of giving instruction in Naval matters to the Royal Garrison Artillery, with a view to more efficient co-operation in time of war. As a result it has been arranged that lectures by Naval officers shall be given from time to time to officers of the Royal Garrison Artillery at Portsmouth and Shoeburyness; the Gunnery and Torpedo Schools have been placed in direct communication with the Army School of Gunnery; officers of the two Services will attend reciprocally the Naval War Courses and the Army School of Gunnery and Naval and Coast Artillery gun practices; and Garrison Artillery officers will be allowed to accompany torpedo craft when engaged in manœuvres off defended harbours, while Naval officers will be permitted to be present in the defending batteries on these occasions.

The established system of entry and selection of cadets has been followed systematically throughout the year. The course of study at Osborne was interrupted seriously in the summer term by an epidemic of infectious complaints common to boys of youthful age; at Dartmouth, where the cadets are two years older, there has been no serious outbreak of disease of any kind. It has been decided to start building at once a hospital for infectious cases at Osborne.

The college at Dartmouth will receive its last quota of cadets in May next, and thenceforward both colleges will be in full working order.

In September, the first cadets who join under the new system of training will pass out and be embarked for their six months' training afloat in a First Class Cruiser to be specially commissioned for the purpose.

Men.

The question of rating, advancement and conditions of service of Seamen and Petty Officers has been carefully reviewed during the year, and certain proposals, having for their principal object the improvement in the position and responsibility of the Petty Officer, are now under consideration with a view to their adoption in the course of the coming financial year.

The training of Boy Artificers and Mechanicians has been readjusted. The former are now trained at the establishments at Portsmouth and Chatham, while the training of the latter is concentrated at Devonport. An Inspecting Captain has been appointed having his headquarters at Portsmouth, with powers of general supervision over the training of both Boy Artificers and Mechanicians. Arrangements have also been made for the training of Leading Stokers under the new system at each port.

An uniform system of training Special Service Seamen has been applied to all three ports. In future these men will have a short period of special training in the ships of the Home Fleet, so as better to adapt them to service on board sea-going ships. The reports of the Special Service Seamen and Special Service Stokers particularly, who were embarked during the manœuvres, were satisfactory.

The sea-going training of Boys and Youths has been recently modified, advantage having been taken of the facilities offered by the re-organised Home Fleet. Boys when waiting draft either to the sea-going cruisers or to the Fleet on completing their cruiser training will be sent to the battleships and cruisers of the Home Fleet. The youths after their preliminary training at Shotley will be sent to the Home Fleet to complete their course of training.

The training and organisation of Engine-room ratings of the Stoker branch to which reference was made last year has been established and is working satisfactorily. There is reason to believe that the improved prospects open to the Stoker branch have led to better recruits presenting themselves for entry.

The scheme of physical training in the Fleet has been further extended and developed. The relations of officers and others generally towards the physical training of the men under them have been defined. Ju-jitsu classes have been formed at Portsmouth experimentally, with a view to determining the desirability of introducing this exercise generally into the scheme of training of the older men. The training of the Royal Marine Instructors will in future be conducted at the School of Physical Training at Portsmouth. All Marine recruits at Deal are now put through the Naval system of training.

The education and training of boys in Greenwich Hospital School has been revised with a view to the present conditions of service in the Navy, and steps have been taken to secure that a larger number of the more intelligent boys join the seaman class.

Arrangements have been made for a more systematic course of lectures for the benefit of seamen afloat, and for the supply of magic lanterns and slides to illustrate the subject of the lectures. A new collection of popular songs suitable for use in the Fleet has been published.

The system under which officers' servants are recruited for and serve in His Majesty's Navy has been enquired into, and various changes designed to improve their status and conditions of service, including the provision of better accommodation on board ship, are under consideration.

Recruiting during the year has been satisfactory, and no difficulty has been experienced in obtaining the full numbers required in each rating. Recruiting for Stokers has been very good, particularly among the Special Service men.

An arrangement has been made with the British Red Cross Society whereby that society will be generally recognised as the central organisation through which offers of assistance from societies and individuals in time of war should be made to the Admiralty, except as regards the services of the members of the Auxiliary Sick Berth Reserve, which, as hitherto, will be associated with the St. John's Ambulance and St. Andrew's Ambulance Associations.

Royal Marines.

The number of Royal Marines borne on 31st December was 17,452, the total strength of the Corps having been fixed at 17,500.

The Royal Naval School of Music, which was established in 1903, is making steady progress. The present number of band ranks for service afloat is 1051. Thirty-five bands under the new scheme are now embarked in H.M. ships.

Suitable Sick Quarters have been provided for the Chatham Division R.M.L.I., by the conversion of the Commandant's old house.

Considerable progress has been made with the reconstruction of the building formerly used as the Naval Hospital into barrack rooms for Royal Marines, and several of the buildings have already been taken over for use.

The arrangements referred to last year in regard to the examination of Marine officers in Military subjects while serving afloat have been found a convenience and will be continued.

During the past year Marines have been landed from the larger squadrons for the carrying out of field exercises in a more systematic manner, and the arrangement made in 1905 whereby the Senior Marine Officer has been given special responsibility in regard to the scheme of exercise has worked satisfactorily.

Use continues to be made of Marine officers in Naval duties on board ship, for which their experience and training qualify them.

Coast Guard.

The policy instituted last year of closing stations not required for Naval work at which extensive repairs were required, or where the quarters were no longer suitable or available, has been continued. Thirty-five stations and detachments have been closed since 1st April, 1906, and twelve more will be closed before 31st March, 1907.

The entry of men (except a small number of signal ratings for War Signal stations) into the Coast Guard from the Fleet has been suspended, and the total numbers borne will be further reduced in 1907-8 to the extent of 262.

The improvement in the efficiency of the War Signal stations continues to be maintained. Arrangements have now been made that the peace and war crews of the stations are the same, and the result, as shown by the experience during the recent manœuvres, has been most satisfactory.

Royal Fleet Reserve.

The numbers of the Royal Fleet Reserve have increased from a total of 14,313 to 16,222 during the year, the total strength on the 31st December, 1906 being:—

—	Class A.	Class B.	Total.
Seamen, etc.	3,326	5,622	8,948
Stokers	983	1,720	2,703
Marines	1,715	2,856	4,571
	6,024	10,198	16,222

Careful consideration has been given to proposals for facilitating the civil employment of men discharged from the Fleet to the Royal Fleet Reserve. A tentative arrangement has been made with the Marine Society for assisting men desirous of employment in the Mercantile Marine, which it is hoped may be a benefit to the men themselves and also to the Mercantile Marine.

Royal Naval Reserve.

A new system of training for Royal Naval Reserve officers and men was introduced on the 1st April, 1906, under which *training* on board effective ships in commission is substituted for *drill* on board harbour drill ships and at shore batteries.

As a result of this, five torpedo-gunboats and five harbour drill ships were paid off on 31st March, 1906, and twenty-five Royal Naval Reserve batteries closed. The remaining four harbour drill ships and eight batteries will be retained for a period not exceeding five years from 1st April, 1906.

Royal Naval Reserve officers have been given the option of drilling at the remaining drill stations under the old system for five years from 1st April, 1906, but on promotion they must embrace the new system.

Royal Naval Reserve men serving in the force on 1st April, 1906, have been given the option of carrying out their drill at the remaining shore batteries or harbour drill ships during their current period of enrolment or of adopting the new system, but on re-enrolment they must embrace the new system.

The training under the new system is being carried out on board the ships of the Home Fleet, and the system has worked very satisfactorily and has advantages over the former system, both as regards efficiency and economy.

A limited number of entries of Executive Officers, Royal Naval Reserve, has been made during the year; the entry of men was suspended up to October, 1906, but arrangements have now been made to resume entries of Seaman and Stoker ratings to a limited extent under the new system.

About 600 Royal Naval Reserve firemen were embarked for the manœuvres as part complement of ships employed, and satisfactory reports were received as to their conduct and ability from the Commanding Officers of the ships in which they were employed.

The strength of the Royal Naval Reserve (Home) on 31st December, 1906, was:—

Executive officers	1,524	1,900	27,167
Commissioned engineer officers	299		
Warrant engineers	77		
Engine-room artificers	528	25,267	
Seamen ratings	18,556		
Stoker ratings	6,183		

On that date 428 executive officers, Royal Naval Reserve, on the Active List had already undergone 12 months' Naval training, and were in receipt of training fees. In addition, 65 executive officers, Royal Naval Reserve, are now undergoing 12 months' Naval training.

The Colonial Naval Reserves have been satisfactorily reported on during the year. Steps are being taking to improve the training of the Colonial crews of certain ships on the Australian station under the agreement.

The strength of the Colonial Royal Naval Reserve is as follows:—

—	Number.	Date.
Australasia	362	1st November, 1906.
Newfoundland	590	31st December, 1906.
Malta	400	1st January, 1907.

There are 84 Assistant Paymasters in the special reserve of accountant officers.

Royal Naval Volunteer Reserve.

No increase has been made in this Reserve during the current year, and the strength of the force on 31st December was as follows:—

—	Complement.	Borne 31.12.06.	
Permanent Staff:—			
Officers	7	7	70
Petty officers and men	63	63	
Royal Naval Volunteers:—			
Officers	186	168	3,735
Honorary officers	—	20	
Petty officers and men	4,122	3,547	

During the year opportunities have been given to the Naval Volunteers to embark for periods of from 14 to 28 days in ships engaged in the manœuvres, and ships of the Reserve Divisions, and about 980 officers and men took advantage of this.

The reports of officers and men received from the captains of the ships in which the Volunteers have been trained continue to be satisfactory.

In addition to embarkation in H.M. ships, arrangements have been made for special courses of instruction in Naval duties for surgeons, R.N.V.R., at Haslar Hospital, and for R.N.V.R. accountant officers in London. Two surgeons, R.N.V.R., have satisfactorily passed through the course at Haslar up to this date.

Particular attention is being paid to instruction in signalling, and the attention of the Volunteers has been called to the importance of every man acquiring some trade or special qualification (*e.g.*, signalling) which will enhance his usefulness to the Naval service.

A considerable proportion of the men are already acquainted with trades (*e.g.*, electricians, armourers, shipwrights, etc.), which are required in His Majesty's ships, and arrangements have been made for men holding such qualifications to undergo a short training to obtain a certificate of competency in these trades.

Thirty-two Royal Naval Volunteers have qualified for these certificates, including two as Engine-room Artificers.

Harbour drill ships (recently used by the Royal Naval Reserve) have been lent to the Tyneside Division and Dundee Companies, respectively, and drill halls (also recently used by the Royal Naval Reserve) have been leased to the Brighton and Carnarvon Companies. Fine new premises have been erected by the Clyde Division in Glasgow.

GREENWICH HOSPITAL.

Northern Estates.—Farms.

Considerable progress has been made in putting the recently acquired property at Priorsdale into a satisfactory condition as regards sanitation, water supply and repairs generally.

The season has, on the whole, been a favourable one, and all the farms are let.

Greenwich Estate.

The improvements to the market, which include a new roof and repaving throughout, conversion of the retail shops into wholesale warehouses, and provision of stabling accommodation are now complete.

New byelaws authorising the holding of a market on each week-day have been prepared, and are awaiting the final approval of the Local Government Board.

Some further property in Church Street, the condition of which was prejudicial to the market area, has been acquired, and is now in course of demolition preparatory to rebuilding.

The revenue from the estate continues to show a steady increase, and there are no important premises vacant.

Royal Hospital School.

The standard of efficiency has been maintained, and the highest possible educational grant again earned.

Painted Hall.

The security of the roof of the Painted Hall having been called in question in consequence of the age and condition of the timbers, Mr. T. G. Jackson, R.A., was called upon to examine and report upon its condition.

The necessary work will, it is estimated, entail an expenditure of about £1000.

Mr. Jackson has suggested a method by which it can be carried out without endangering Thornhill's celebrated ceiling, and it is proposed to undertake it in the course of 1907.

ORDNANCE.

The amount asked for under Vote 9 for 1907–8 is £2,348,700, against £2,986,000 voted for 1906–7, or a decrease of £637,300.

Provision has been made to complete the guns for the vessels included in the 1905–6 programme, and to advance those for the ships laid down in 1906–7, and for the authorised outfits and reserves of ammunition, torpedoes, and other Naval ordnance stores for new programme ships.

Progress in the manufacture and supply of guns and other warlike stores during the year has been satisfactory. The guns have been ready to be placed on board ships building as required.

A system of examining and proving heavy guns at contractors' works has been inaugurated with good results. This system will be continued during 1907–8, and if it is successful it will be of great advantage, in time of emergency, that the guns can be sent direct from the works to their destination without the necessity of passing through Woolwich Arsenal.

Inspection and Proof.

On the recommendation of a joint Admiralty and War Office committee, steps have been taken to associate Naval officers with the work of inspection and proof of ordnance stores, and with the scientific experimental ordnance work carried out at Woolwich and Shoeburyness. It is anticipated that the Naval service will derive great benefit from this step, and that the experience gained by Naval officers will be of considerable value.

Guns and Mountings.

The pattern of 12-inch gun mounted in the Dreadnought will also form the armament of the battleships of the 1906–7 programme. For the battleships of the 1907–8 programme an improved design of gun has been accepted.

The experiments having for their object improvements in the appliances for training elevating guns alluded to in last year's statement have given very promising results and are being continued.

The electrically worked mountings referred to last year are nearly completed and trials will shortly be carried out.

The alterations in the design of 12-inch gun mountings embodied in the Dreadnought's turrets have proved generally successful.

Sights.

Re-sighting of the turret and 6-inch guns of the Fleet has been proceeded with, though the turret sights were somewhat delayed through the trial of a novel proposal. The newest types of sights actually supplied have proved to be very successful.

Improvements in the method of sighting the guns of torpedo-boat destroyers are being carried out.

Fire Control.

The purchase of electric instruments, cables, rangefinders, and other accessories for fitting the approved scheme of control into battleships and cruisers, has been completed.

Instructional Armaments.

Portsmouth.—Two dummy turrets have been completed at Whale Island for the instruction of turret ratings in shooting and drill.

H.M.S. Revenge has been appropriated to the Excellent as gunnery tender to carry out instruction in shooting at long range, and this ship also carries out the training of the turret shooting ratings.

Chatham-Sheerness.—Approval has been given to begin construction of the necessary gun batteries and instructional sheds at Chatham with a view to removing the Gunnery School from Sheerness to Chatham.

Devonport.—The various gun batteries and buildings for the new Gunnery School are now in course of construction.

Target Practice.

The supply of new pattern targets has been made general.

Trials are being carried out with a view to further improvements.

Revised regulations for the Heavy and Light Gunlayers' Tests and for Battle Practice in both ships and destroyers were issued to the Fleet early last year, and the returns show a very marked improvement in the shooting.

Approval has been given to increase the annual allowance of ammunition for ships in the newly constituted Home Fleet, and regulations have been framed to govern the practices.

Diving.

A committee has been formed to investigate the subject of diving in deep water.

The experiments are not complete, but from interim reports it is anticipated that considerable advance will be made in this matter.

Torpedo Tubes.

Torpedo discharges of an improved design are being fitted in ships and destroyers now building.

Mining.

Important changes and progress in this branch of the Service have been made both as regards the mines and the means of laying or removing them.

Wireless Telegraphy.

Wireless telegraphy continues to make good progress, and its increased efficiency and utility have been well demonstrated during the various manœuvres and exercises which have taken place. Extensive experiments have been carried out with very successful results. The majority of the ships of the Fleet have now been supplied with the latest apparatus,

Searchlights.

Good progress has been made in increasing their efficiency; larger and more powerful searchlights have been introduced.

Ordnance Depôts.

Good progress has been made in the provision of increased storage for cartridges and projectiles at the Royal Naval Ordnance Depôts, Lodge Hill, Upnor, Priddy's Hard, and Bull Point.

The new magazines at Gibraltar are nearing completion, and the Admiralty and War Office are considering the question of separating the Naval and Military Ordnance duties at that place, so that when the new accommodation is ready for use, the Admiralty shall be responsible for the Naval Ordnance duties in the same way as at Home depôts and Malta.

It has so far been impracticable to effect separation of the Ordnance duties at Hong Kong, but the future arrangements at that place are now under consideration by the Admiralty and War Office.

NEW CONSTRUCTION.

Battleships.

The Dreadnought has been completed, passed through all her trials successfully, and commissioned.

The three later ships of the King Edward VII. class, viz., Britannia, Africa, and Hibernia, have been completed, and passed satisfactorily through all their trials, attaining a speed of about 18¾ knots at full power. They have been commissioned, so that the eight vessels of this class are now on service.

Three ships of the improved Dreadnought type have been laid down, viz., the Bellerophon at Portsmouth, Temeraire at Devonport, and Superb at Elswick.

The Lord Nelson and Agamemnon have both been launched, the machinery is mostly in position on board, and the general progress is satisfactory.

Armoured Cruisers.

The four later ships of the Duke of Edinburgh class have successfully passed through all their steam trials, reaching a speed of about 23¼ knots. The Cochrane, Natal, and Achilles will have been delivered by the contractors complete and ready for commission by about the end of this financial year; the fourth vessel, Warrior, will be completed at Pembroke Dockyard early in 1907–8. These four ships are sister vessels to the Duke of Edinburgh and Black Prince, except that four 50-calibre 7·5-in. guns are carried in single turrets on the upper deck, in lieu of the ten 6-in. guns in battery on the main deck in the first two ships of the class.

Two of the armoured cruisers of the Minotaur class have been launched during the year, the Minotaur at Devonport and Shannon at Chatham, and are now being prepared for their trials. The third ship of the class, Defence, will be launched at Pembroke in April.

The three large armoured cruisers Inflexible, Indomitable, and Invincible were laid down in February, March, and April, 1906, respectively, and have made good progress, being nearly ready for launching.

Unarmoured Cruiser.

A design of a fast unarmoured cruiser has been prepared, and the ship will be laid down at Pembroke early in the next financial year. In this design special attention has been given to her capabilities for accompanying destroyers and acting as a parent ship in addition to carrying out the peace duties of a light cruiser.

Destroyers and Torpedo Boats.

Four First Class torpedo boats (called coastal destroyers in last year's statement) have been delivered. It is expected that three more will be delivered before the end of the financial year.

The remaining five of these vessels are well advanced and will probably be delivered during the next few months.

Eighteen designs (including alternatives) for the twelve First Class torpedo boats and two ocean-going destroyers provided for in the current Navy Estimates have been examined and orders provisionally placed.

Other Vessels.

The building of His Majesty's Yacht Alexandra has been advanced, and she will be completed during the next financial year.

The fitting out of the Fleet repair ship Cyclops will be completed early in the next financial year.

One steam hopper dredger barge for Devonport, three 100-ton water lighters for Home Ports, three 50-ton Naval Ordnance barges, one 1000-ton coal depôt, and four 250-ton coaling lighters have been completed. Fifteen horse boats, one steam mooring lighter and tug for Devonport, and one mooring lighter for Sheerness will be completed by the end of March, 1907, or soon after.

One paddle tug for Gibraltar and six 20-ton ammunition barges now being built will be completed during 1907–8.

Submarines.

The last vessels of the B class, ordered in 1904–5, have been completed and delivered, and are now on active service.

Four of the eleven C class boats, ordered in 1905–6, have been completed and delivered, and it is anticipated that four more will be completed by 31st March next.

Five more boats of the C class have been ordered, and these boats will be well advanced by 31st March next; two boats of the same class have been laid down at Chatham.

General.

The arrangements on board H.M. ships for cooking, bread-baking, sanitation, ventilation, warming, washing, lighting, dealing with wounded, coaling, working torpedo net defence, &c., have been improved and extended during the past financial year, and workshops, with the necessary machine tools, for armourers and electricians have been provided in many ships.

MACHINERY AND BOILERS.

Four of the older First Class torpedo boats have been re-boilered with water-tube boilers in lieu of the locomotive type originally fitted, and have successfully carried out their trials.

In all the vessels at present under construction, with the single exception of the Warrior, which will shortly be finished, complete installations of water-tube boilers have been fitted.

Large tube boilers of the Babcock and Wilcox or Yarrow type have been fitted in battleships and First Class cruisers, and various types of small tube boilers are being fitted in destroyers.

Reserve sets of auxiliary machinery have been purchased during this year, following the practice of previous years; by the provision of these engines, &c., it is anticipated that the time taken to replace breakdowns to these small but important engines will be much reduced, as the stock is now practically complete, and is typical for the various classes of ships.

The present capacity of electric generating machinery of the older classes of ships is gradually being extended in order to cope with the larger application of electric motors and other appliances; the installation of this machinery in vessels under construction is also being increased consequent on the larger number of auxiliary engines, fans, and motors now being driven by electrical power.

Turbine Propelling Machinery.

During the present financial year several vessels fitted with this type of propelling machinery have successfully completed their contract trials.

The largest vessel completed during the present year, the Dreadnought, is fitted with turbine propelling machinery. This vessel completed her contract trials without a hitch, the trials being highly satisfactory.

On the higher powers the turbine engines proved much more economical than reciprocating engines, and, although more uneconomical at low powers, an advantage of turbine engines is also the lesser boiler power required. In the case of the Dreadnought it would have been necessary to provide one-sixth more boiler power had the vessel been fitted with reciprocating engines.

It may be remarked that the turbine installation in this vessel is the highest power yet completed in any vessel, either Naval or mercantile.

The results obtained in the Dreadnought and in the other turbine-propelled vessels which have been completed this year fully justify the adoption of this type of propelling machinery for H.M. ships, and this policy is being continued in all war vessels of this year's programme.

Repair Ships.

The Assistance has been thoroughly overhauled and repaired since grounding, and the Cyclops, a ship now being fitted up, will shortly be in full commission. They are fitted in a very complete manner and are capable of executing repairs of considerable magnitude to any vessel, besides which they are fitted to act as distilling vessels. Steps are also being taken by the purchase and fitting of workshop machines and appliances to convert the Aquarius, at present a distilling vessel, into a repair ship.

Ice-making Machinery.

Improved installations of ice-making and cold-storage machinery have been fitted in all the more recent vessels.

WORK AT THE DOCKYARDS.

Two submarine boats have been begun at Chatham Dockyard, but as these are the first vessels of the class to be constructed in H.M. Dockyards, rapid progress is not arranged for.

Satisfactory progress is being made with the work of refitting ships provided for under the heading of "Large Repairs," and, notwithstanding the fact that several important and unexpected items under this heading have had to be undertaken, it is anticipated that the original programme will be approximately realised.

Owing to the nature of the programme requirements, it was found necessary, during the early part of the financial year 1906–7, to dispense with the services of some of the workmen employed at Chatham and Pembroke, so as to preserve a proper working balance between the men of different trades. Since that time, however, no important discharges on reduction have taken place, but minor adjustments in the numbers of the various trades have been and are being effected, in accordance with the demand of the work in hand and in prospect.

As indicated in the "Memorandum explanatory of recent and forthcoming changes in the administration of His Majesty's Dockyards in the United Kingdom," published on the 1st August last (Cd. 2861), the question of the adequacy of the pay of the various classes of workmen in His Majesty's Dockyards has been carefully reviewed. It was decided to grant various concessions both as regards conditions of service and remuneration, which will entail an estimated ultimate additional liability of £60,000 per annum.

The work of installing electric light and power in the Dockyards and other Naval Establishments is approaching completion. The new generating stations at Portsmouth, Devonport, Pembroke, and Chatham Dockyards are now in active operation, and are supplying current for general use, while connections to the supply system are being made as the various works are completed.

The installations at Gibraltar and the Cape of Good Hope are running, but extension work in connection therewith is in hand at each yard, and an extension is also in progress at Pembroke.

The generating station at Sheerness, which was held in abeyance for some time, is now under construction, whilst that at Malta is practically complete. Work in connection with the station at Hong Kong is in hand, and steps are being taken to provide the necessary machinery.

The replacement of obsolete machinery in the Yard workshops, which has been in progress for the last three years, is now nearly complete, and the shops generally are now considered to be practically up-to-date. Replacements and conversions of the lifting and hauling appliances of the Yards are also in progress.

LARGE REPAIRS.

The following is a list of the principal works under this heading which have been, or will be, completed during the financial year 1906–7:

Battleships:—Hannibal, Royal Sovereign, Albion.

Armoured Cruisers:—Bedford, Donegal, Leviathan (practically complete).

Protected Cruisers:—Amphitrite, Ariadne (practically complete), Bonaventure, Edgar, Hyacinth.

Sloops:—Fantome, Merlin, fitted for surveying service.

Repair Ships:—Assistance, Aquarius.

The details of the repairs and refits proposed to be carried out in

1907–8 will, as usual, appear in the programme portion of the Navy Estimates. The most important items are given below:—

Battleships:—Canopus, Goliath, Glory, Dominion.

Armoured Cruisers:—Berwick, Cornwall, Cumberland.

Protected Cruisers:—Andromeda, Blake, Blenheim, Diadem, Fox, Gibraltar, Hawke, Niobe.

Auxiliaries:—Hecla, Leander, Tyne, Vulcan.

NEW WORKS.

Works Provided in Estimates 1906–1907.

Cape of Good Hope.—The accommodation for Police has been completed. The Hospital and Sanatorium will be finished by the end of the year.

Chatham.—The improvement and extension of the Dockyard Water Supply and the conversion of Melville Hospital into Marine Barracks are practically completed. The residence for the Commander-in-Chief has been completed, and is in occupation. Progress is being made with the reconstruction of the side walls of Upnor entrance. It has been decided to defer the River Training Works at Hoo Ness.

Deal.—The new canteen at the East Barracks is practically complete.

Gibraltar.—The additional accommodation at the Hospital and the extension of the jetty at Rosia Bay (Victualling Yard) will be finished in 1907–8.

Greenwich Royal Naval College.—Progress is being made with the renewal of the roofs of the main blocks of this building, which is rented from Greenwich Hospital.

Hong Kong.—The torpedo range will be completed in 1907–8.

Malta.—The renewal of the wharf walls in French Creek and the new buildings connected with the hydraulic dock are practically complete. The scheme for the renewal of the wharf walls in Dockyard Creek has been reduced, and the work will be finished in 1906–7. The reservoir at Luca, torpedo stores at Calcara Creek, and the torpedo range will, it is anticipated, be completed in 1907–8.

Plymouth.—The railways, North and South Yards, the new buoy house and the new machine shop, South Yard, will be finished in 1906–7. The new jetty and railways, South Yard, the renewal and strengthening of the girders and stanchions for traveller, North Yard, and the widening of the drill shed at the Royal Naval Barracks will be completed in 1907–8. The improvements and alterations, and the wards for lunatics and prisoners at the Royal Naval Hospital, are finished.

Portland.—The repairs to the head of the breakwater are being proceeded with as necessary. The berthing for torpedo-boat destroyers is practically finished, and the reconstruction of the inner arm of Camber jetty will be completed within the financial year.

Portsmouth.—The lengthening of No. 5 Dock is practically completed; the quarters for sub-lieutenants at Whale Island are occupied. The reconstruction of the entrance to No. 3 Dock, the extension of the chemical laboratory, and the alteration to the Dockyard boundary will be finished in 1906–7. The new steam factory, the improvement of shipbuilding facilities, and the office extension at Whale Island are nearing completion, and will be finished in 1907–8. The extension of the Mold Loft floor, the lengthening of No. 15 Dock, the reconstruction of six flats and two staircases at Haslar Hospital, and the additional class rooms and libraries at the Britannia, Royal Naval College, Dartmouth, will also, it is anticipated, be completed in 1907–8. The scheme for the new lock is now being considered, and the work will be begun in the ensuing financial year.

Woolwich.—The additional railway facilities, protection against abnormal tides, and quarters at Plumstead are being proceeded with by the War Department.

Accommodation on Shore for Boys' Training Establishments.—The training establishment at Shotley Point (Harwich) is virtually completed, with the exception of a new swimming bath, which will be finished in 1907–8.

The principal new works provided for in 1907–8 are:—

Bermuda.—House for hydraulic engine and boiler, &c.

Harwich (Shotley Point).—Additional hospital accommodation.

Haulbowline.—Lengthening dock.

Hong Kong.—New storehouses.

Portsmouth.—Foundations for 160-ton crane.

Osborne, R.N. College. New infectious hospital.

Shoeburyness.—New three-tunnel butt.

PROGRESS UNDER NAVAL WORKS ACT.

(*a*) *Enclosure and Defence of Harbours.*

Malta Breakwater.—The minor works connected with the scheme, including wharf walls and diversion of sewage, have been completed or are well in hand. Better progress is now being made with the main contract work, viz., the St. Elmo and Ricasoli breakwaters, the latter, *i.e.*, the short arm, being almost finished. The extended date for the completion of the whole of this contract is 1st October, 1908.

Gibraltar.—The commercial mole is now completed. It was originally arranged for the Gibraltar Colony to share in the use of the entire mole, but Naval requirements now necessitate the Admiralty appropriating the greater portion of it for their exclusive use.

Dover.—The Admiralty Pier extension, the reclamation, and the eastern arm are completed, with the exception of some minor works on the heads. The greater part of the South breakwater is also completed, and the necessary dredging is being proceeded with.

(*b*) *Adapting Naval Ports to Present Needs of Fleet.*

Deepening Harbours and Approaches.—The whole of the work provided for in this item has now been finished, with the exception of the contract dredging at Plymouth and Haulbowline, which is almost completed. Provision is made in Vote 10, 1907–8, for working Admiralty plant engaged upon the special dredging still remaining to be carried out at Plymouth and Portsmouth.

Keyham Dockyard Extension.—The works under the main contracts are practically completed, and the new docks, locks, and basins are in use. Some of the buildings are in course of construction and arrangements are being made for the erection of the remaining buildings.

Gibraltar Dockyard Extension.—The three docks are completed and in use, and the Dockyard Extension works will be completed during 1907. The water storage tanks on the east side of the Rock are also nearly finished, and the residences for officers and artisans are well advanced.

Hong Kong Dockyard Extension.—The tidal basin and wharf wall, the deepening of basin areas, approaches to wharf walls, &c., the buildings for the engineering and constructive departments, the graving dock, &c., are nearing completion. The works contingent upon the dock, comprising pump wells, culverts and penstock shafts, caisson, engine and boiler house, western sea wall, &c., are well advanced. Incidental services, including reclamation, drainage, latrines, water and fire services, railways and crane roans, &c., are being proceeded with.

Colombo Dock.—This dock, carried out under the Colonial Government and partly paid for by the Admiralty, is completed with the exception of certain incidental services which are under consideration, and of the North Guide Pier, which is being proceeded with. The dock is now capable of being used by H.M. ships.

Malta Dockyard Extension.—The contract work for the two new docks is completed with the exception of a few minor incidental services. The new shops, stores, factory, &c., included in the reduced scheme for the Dockyard extension are being proceeded with, some of the buildings are practically completed.

Bermuda Dockyard Extension.—This work, including the contract for new breakwater, wharf walls, &c., is now completed.

Simon's Bay Dockyard Extension.—The dock, East breakwater, East and West piers, and necessary dredging are all well advanced.

Coaling Facilities and Fuel Storage.

Plymouth.—A scheme for the establishment of a coaling depôt on a reduced scale (comprising re-construction of wharf, extension of quay, railways, water supply, &c.), has been drawn up and the work started. Provision is made in Vote 10, 1907–8, for completing it.

Portland.—The contract work of extending the coaling jetty has been completed. In connection with the storage of oil fuel a concrete jetty and two additional tanks have been completed. Provision has been made in Vote 10, 1907–8, for further tanks for oil fuel storage.

Malta.—The coaling scheme has been completed.

Hong Kong.—The coaling jetty at Kowloon has been finished. The coal sheds are being proceeded with.

Schemes for the storage of oil fuel at other stations have been under consideration, and provision is made in Vote 10, 1907–8, for starting work.

Chatham Dockyard Extension.—The contract work for the new river wall at the Upnor Entrance is practically completed.

Sheerness Depôt for Torpedo-Boat Destroyers.—The following are the main works comprised in the scheme: Extension of Nos. 4 and 5 docks, caisson at No. 2 Dock, electric shop, mast shed, torpedo tube store, &c., dock pumping station, new engine and boiler house at Navy well, and zincing shops. The whole of these works are now practically completed.

Naval Establishment at Rosyth.—(Preliminary Works.)—Arrangements have been made to obtain a permanent supply of water; the scheme (including new reservoir and mains) is being carried out by the Dunfermline District Committee and is well advanced. A railway line to connect the proposed Naval establishment with the North British Railway has been practically completed by the railway company. Railway connections with the company's system inside the Admiralty boundary have been provided. Borings have been made and an experimental cylinder is being sunk in order to obtain information necessary for determining the method of construction to be adopted for the wharf walls, &c. An item for the Naval Depôt, Rosyth, has been introduced into Vote 10, 1907–8, and money provided for the production of plans based on the investigations already carried out.

NAVAL BARRACKS, &c.

Gunnery Schools.

Chatham.—A scheme has been approved comprising gun drill and stripping shed, shooting instruction shed, lecture room and offices, loading-teacher shed, armourers' workshop, &c. The work has been commenced.

Devonport.—The approved scheme includes gun drill and stripping shed, shooting-instruction shed, loading-teacher shed, additional men's block, barrack courses shed, lecture rooms and offices, armourers' workshop, &c. All these works are in hand and some of them are approaching completion.

Portsmouth.—The extension of the gun drill battery is practically finished.

Keyham Naval Barracks.—Contracts have been let for new gymnasium and cart shed, stables, &c., and squash racquet courts, and the works are practically completed.

Magazines.

Chatham.—Two new magazines at Chattenden and certain improvements at Upnor and Lodge Hill have been completed. A new laboratory at Chattenden is practically finished and a shell-filling laboratory at Upnor is in hand. Two additional magazines at Chattenden, and works connected with the disposal of sewage at Upnor and Chattenden, are about to be started.

Portsmouth.—Two additional cordite magazines at Priddy's Hard are in hand and approaching completion.

Plymouth.—Additional shell stores are being proceeded with at Bull Point.

Malta.—The additional magazine accommodation is approaching completion.

Coast Guard Ranges and Royal Naval Reserve Batteries.—The Coast Guard works already approved are approaching completion.

Torpedo Ranges.—The extension of the torpedo range at Horsea Island has been completed. Arrangements are being made for the provision of an additional range elsewhere.

Electric Light and Power in Naval Establishments.—Contracts have been let for generating stations, machinery, and other works involved in the installations of electric light and power at the Cape of Good Hope, Chatham, Gibraltar, Malta, Plymouth, Portland, Portsmouth, and Sheerness. The station at the Cape of Good Hope has been completed, and the work at the other establishments is well advanced.

TWEEDMOUTH.

23rd February, 1907.

Abstract of Navy

Votes.		Estimates,	
		Gross Estimate.	Appropriations in Aid.
	I.—NUMBERS.		
A.	Total Number of Officers, Seamen, Boys, Coast Guard, and Royal Marines	128,000	....
	II.—EFFECTIVE SERVICES.	£	£
1	Wages, &c., of Officers, Seamen and Boys, Coast Guard, and Royal Marines	7,006,412	136,712
2	Victualling and Clothing for the Navy	2,441,217	444,817
3	Medical Establishments and Services	287,856	19,156
4	Martial Law	14,295	95
5	Educational Services	236,831	64,331
6	Scientific Services	90,280	25,180
7	Royal Naval Reserves	426,518	8,218
8	Shipbuilding, Repairs, Maintenance, &c.:		
	Section I.—*Personnel*	2,571,700	21,800
	Section II.—*Matériel*	3,420,200	385,000
	Section III.—Contract Work	7,783,000	137,000
9	Naval Armaments	2,508,700	160,000
10	Works, Buildings, and Repairs at Home and Abroad	✓2,792,400	34,000
11	Miscellaneous Effective Services	414,437	13,437
12	Admiralty Office	373,350	8,750
	Total Effective Services . . . £	30,367,196	1,458,496
	III.—NON-EFFECTIVE SERVICES.		
13	Half-Pay, Reserved, and Retired Pay	850,775	12,875
14	Naval and Marine Pensions, Gratuities, and Compassionate Allowances	1,321,745	19,745
15	Civil Pensions and Gratuities	371,330	430
	Total Non-Effective Services . . £	2,543,850	33,050
	GRAND TOTAL . . . £	32,911,046	1,491,546

NOTE.—Provision to the extent of £977,091 is included in the Estimates for 1907-1908 under Votes 8, 10 and 12, for the

Estimates for 1907-1908.

1907-1908.	Estimates, 1906-1907.			Difference on Net Estimates.		Votes.
Net Estimate.	Gross Estimate.	Appropriations in Aid.	Net Estimate.	Increase.	Decrease.	
Total Numbers. 128,000	129,000	....	Total Numbers. 129,000	Numbers.	Numbers. 1,000	A.
£	£	£	£	£	£	
6,869,700	6,946,527	135,827	6,810,700	59,000	....	1
1,996,400	2,582,099	528,899	2,053,200	....	56,800	2
268,700	294,797	19,297	275,500	....	6,800	3
14,200	14,795	95	14,700	....	500	4
172,500	229,461	63,861	165,600	6,900	....	5
65,100	90,193	25,093	65,100	...	....	6
418,300	434,761	8,161	426,600	....	8,300	7
						8
2,549,900	2,429,400	21,800	2,407,600	142,300	....	Sec. I.
3,035,200	3,355,200	528,000	2,827,200	208,000	....	Sec. II.
7,616,000	8,725,400	137,000	8,583,400	....	942,400	Sec. III.
2,348,700	3,135,123	149,123	2,986,000	....	637,300	9
2,758,400 ✓	1,986,500	32,000	1,954,500 ✓	803,900	....	10
401,000	495,090	12,890	482,200	....	81,200	11
364,000	360,250	8,750	351,500	13,100	....	12
28,908,700	31,079,596	1,670,796	29,408,800	1,233,200	1,733,300	
837,900	833,580	12,880	820,700	17,200	....	13
1,302,000	1,276,028	19,728	1,256,300	45,700	....	14
370,900	384,098	398	383,700	....	12,800	15
2,510,800	2,493,706	33,006	2,460,700	62,900	12,800	
✓ 31,419,500	33,573,302	1,703,802	31,869,500 ✓	1,296,100	1,746,100	

Net Decrease £450,000

continuation of services hitherto provided for out of funds raised under the authority of the Naval Works Acts, 1895 to 1905.

STATEMENT of the Principal Points of DIFFERENCE between the ESTIMATES of 1906–1907 and those for 1907–1908.

DECREASES.		£
Victualling and Clothing		180,300
Medical Establishments and Services		6,800
Martial Law		500
Educational Services		1,342
Royal Naval Reserves		8,300
Propelling Machinery for His Majesty's Ships and Vessels (Contract)		373,060
Hulls of Ships (Contract)		36,376
Armour for His Majesty's Ships and Vessels (Contract)		568,149
Gun Mountings and Air Compressing Machinery (Contract)		179,268
Guns		225,000
Projectiles and Ammunition		297,000
Torpedoes, Gun-cotton, Small Arms, and Miscellaneous Ordnance Stores		103,000
Increase in amount of Receipts arising from the sale of unserviceable, &c., Naval Ordnance Stores		10,877
Miscellaneous Effective Services		81,200
£		2,071,172
INCREASES.	£	
Wages, &c., of Officers, Seamen and Marines	175,500	
Wages of Artificers and Police in Dockyards	125,417	
Naval Stores, and Coal, &c., for the Fleet	107,150	
Decrease in Amount of Receipts arising from the sale of Old Ships and unserviceable Naval Stores and Machinery.	135,000	
Machinery, &c., for His Majesty's Shore Establishments (Contract)	128,800	
Royal Reserve of Merchant Cruisers	90,880	
Works, Buildings, and Repairs	803,900	
Non-Effective Services	50,100	
Miscellaneous Increases	4,425	
		1,621,172
Net Decrease . . . . . . £		450,000

STATEMENT showing the Total Estimated **EXPENDITURE** for the **NAVAL SERVICE**, including Amounts provided in the **NAVY ESTIMATES**, as well as in the **CIVIL SERVICE** and other **ESTIMATES**, for the following Services:—

———		1907–1908.	1906–1907.
NAVY ESTIMATES:		✓ £	✓ £
Estimated Expenditure (after deducting Appropriations in Aid) . .		31,419,500	31,869,500
CIVIL SERVICE ESTIMATES: (*a*)			
Estimated Expenditure under—			
Class I. Vote 9.—Public Buildings, Great Britain:	£		
Maintenance and Repairs, including New Works, Alterations, &c. .	23,170		
Rents, Insurance, Tithes, &c. . . .	11,060		
Fuel, Light, Water, &c.	5,400		
Furniture	6,000		
	———	45,630	49,220
Class I. Vote 10.—Surveys of the United Kingdom		2,000	900
„ I. „ 13.—Rates on Government Property		128,700	122,700
„ I. „ 14.—Public Works and Buildings, Ireland:			
Coast Guard, viz.:	£		
Purchase of Sites	—		
New Works and Alterations, including Naval Reserve Stations . .	2,891		
Maintenance and Supplies . .	4,929		
	£7,820		
Naval Reserve, viz.:			
Maintenance and Supplies . .	128		
	———	7,948	14,100
Class II. Vote 8.—Board of Trade:			
Staff and Incidental Expenses in connection with the Royal Naval Reserve Force . . .		4,150	4,183
„ II. „ 9.—Mercantile Marine Services:			
Staff and Incidental Expenses in connection with the Royal Naval Reserve Force . . .		3,300	3,500
„ II. „ 14.—Exchequer and Audit Department (Cost of Audit):	£		
Navy Cash Accounts	8,738		
Expense and Manufacturing Accounts	5,609		
Store Accounts	5,878		
	———	20,225	20,080
Class II. Vote 23.—Stationery and Printing		100,000	100,000
„ III. „ 1.—Law Charges, England		8,148	8,015
Maintenance of Naval Prisoners:			
„ III. „ 7.—Prisons, England and the Colonies . . .		4,252	3,896
„ III. „ 13.—Prisons, Scotland		150	140
„ III. „ 20.—Prisons, Ireland		397	193
REVENUE DEPARTMENT ESTIMATES:			
Vote 1.—Customs.—Percentage for provision of funds for District Paymasters of the Coast Guard		135	138
Vote 1.—Customs.—Staff and Incidental Expenses in connection with the Royal Naval Reserve Force		3,300	3,300
Vote 2.—Inland Revenue.—Analysis of Food, &c.		275	275
Vote 3.—Post Office.—Postage of Official Correspondence (including Parcels)	£ 18,250		
Vote 5.—Post Office Telegraphs.—Official Telegrams and Expenses in connection with Telegraphs (Admiralty Wires, and Services of Clerks)	23,500		
	———	41,750	38,450
Total	£	31,789,860	32,238,590

Note.—In addition to the Services shown above, an annuity of £16,243 18*s.* is payable to the Commissioners of Woods, &c., from the Consolidated Fund, under the Public Offices Sites Act of 1882 (45 & 46 Vict. c. 32).

(*a*) Provision is also made in the Estimate for Osborne (Class I., Vote 2.) for expenditure in connection with the treatment of Invalid Officers of the Navy in the Convalescent Home at Osborne.

STATEMENT showing the CONTRIBUTIONS from INDIA and the COLONIES towards NAVAL EXPENDITURE.

RECEIVED FROM.	NATURE OF SERVICE.	VOTE.													TOTAL.
		1	2	3	7	8			9	11	12	13	14	15	
						Section I.	Section II.	Section III.							
		£	£	£	£	£	£	£	£	£	£	£	£	£	£
India	Maintenance of His Majesty's Ships in Indian Waters . .	28,000	9,100	500	..	12,500	10,200	13,000	11,600	2,500	..	4,300	8,300	..	100,000
	Indian Troop Service (on account of work performed by the Admiralty) . . .	..	..	..	..	..	..	..	..	..	3,050	..	..	350	3,400
Australian Commonwealth	Maintenance of an Australasian Squadron and the establishment of a branch of the Royal Naval Reserve	58,000	18,300	600	5,000	..	30,700	95,000	5,500	7,000	..	8,500	11,400	..	200,000
New Zealand .															40,000
Cape Colony . .	General maintenance of the Navy . .	11,100	4,600	..	..	4,900	9,100	14,100	6,200	..	..	..	..	..	50,000
Natal		7,700	3,200	..	..	3,400	6,400	9,900	4,400	..	..	..	..	..	35,000
Newfoundland .	Maintenance of a branch of the Royal Naval Reserve . .	..	..	..	3,000	..	..	..	..	..	..	..	..	..	3,000
	Total . . £	104,800	35,200	1,100	8,000	20,800	56,400	132,000	27,700	9,500	3,050	12,800	19,700	350	431,400

VOTE (A).

NUMBERS of OFFICERS, SEAMEN, BOYS, COAST GUARD, and ROYAL MARINES Borne on the Books of His Majesty's Ships, and at the ROYAL MARINE DIVISIONS.

One Hundred and Twenty-eight Thousand.*

I.—SEA SERVICE.

Under which Vote Provided.	RANKS, &c.	NUMBERS, ALL RANKS.				Numbers of all Ranks borne on 1st January, 1907.
		1907–1908.		1906–1907.		
Vote 1	**FOR HIS MAJESTY'S FLEET:**					
	Flag Officers	26		24		
	Commissioned Officers	4,580		4,526		
	Subordinate Officers	641		670		
	Warrant Officers	1,760		1,762		
	Petty Officers and Seamen	90,729		89,351		
	Boys (Service)	1,943	99,679	2,293	98,626	99,537
	COAST GUARD:					
	Commissioned Officers	109		110		
	Chief Officers Divisions and Stations	232		239		
	Petty Officers and Seamen	3,562	3,903	3,773	4,122	3,989
	ROYAL MARINES (for Service Afloat and on Shore):					
	Commissioned Officers	471		469		
	Warrant Officers	43		44		
	Staff Sergeants and Sergeants	1,385		1,421		
	Band Ranks, Buglers and Musicians	1,520		1,466		
	Rank and File	14,720		15,472		
	Band Boys	232	(a) 18,371	363	19,235	18,287
	Total		121,953		121,983	121,813
	Net Decrease		30			

---

* Average for the year. (a) Including 13 officers, Sub-Head H.

VOTE (A)—*continued.*

II.—OTHER SERVICES.

Under which Vote Provided.	RANKS, &c.	NUMBERS, ALL RANKS. 1907–1908.		NUMBERS, ALL RANKS. 1906–1907.		Numbers of all Ranks borne on 1st January 1907.
Vote 1	Naval Cadets	769		740		
	Engineer Cadets . . .	109		117		
	Pensioners in Home Ships and in the Reserves, &c. . . .	471		471		
	Boys under Training—					
	Seaman Class . . .	2,200		3,200		
	Artificer	539	(b)	360		
			4,088		4,888	3,745
Vote 2	For Victualling and Clothing for the Navy	22		27		
Vote 3	For Medical Establishments and Services	573		577		
Vote 4	For Martial Law . . .	19		19		
Vote 5	For Educational Services . .	607		619		
Vote 6	For Scientific Services . .	12		11		
Vote 7	For Royal Naval Reserves . .	52		18		
Vote 8	For Shipbuilding, Repairs, Maintenance, &c.:					
	Section I. . . .	362		516		
	Section II. . . .	21		21		
	Section III. . . .	71		71		
Vote 9	For Naval Armaments . .	105		105		
Vote 10	For Works, Buildings, and Repairs, at Home and Abroad .	47		47		
Vote 11	For Miscellaneous Effective Services	1		1		
Vote 12	For Admiralty Office . .	67		67		
			1,959		2,129	2,071
	Total . . .		(c) 6,047		7,017	5,816
	Net Decrease.		970			
	Total, Sea Service . . .	121,953		121,983		
	„ other Services . .	6,047	128,000	7,017	129,000	
	Net Decrease.		1,000			

(b) Including 12 officers, Sub-Head H.

		1907–1908		1906–1907
(c) Including	Officers, Seamen and Service Boys . .	2,396	..	2,374
„	Retired Officers and Pensioners (Vote 1).	471	..	471
„	Boys (Training, Seaman Class) . .	2,200	..	3,200
„	Boys (Training, Artificer) . . .	539	..	360
„	Boys (Training, Artizan) . . .	217	..	381
„	Royal Marines	224	..	231
		6,047	..	7,017

VOTE 8.

SHIPBUILDING, REPAIRS, MAINTENANCE, &c.

I.—Estimate of the Sum which will be required, in the Year ending 31st March, 1908, to defray the Expenses of Shipbuilding, Repairs, Maintenance, &c., including the Cost of Establishments of Dockyards and Naval Yards at Home and Abroad.

Dockyard Work.

Section I.—Personnel.—Two Million Five Hundred and Forty-Nine Thousand Nine Hundred Pounds.
(£2,549,900.)

Section II.—Matériel.—Three Million and Thirty-Five Thousand Two Hundred Pounds.
(£3,035,200.)

Contract Work.

Section III.—Contract Work.—Seven Million Six Hundred and Forty Six Thousand Pounds.
(£7,646,000.)

(Total of the Three Sections of Vote 8 . . **£13,231,100.**)

II.—Sub-Heads under which Section I., Personnel, of this Vote will be accounted for.

	Estimates.		Increase	Decrease.
	1907-1903.	1906-1907.		
	£	£	£	£
DOCKYARD WORK.				
Section I.—Personnel.				
Dockyards at Home.				
A.—Salaries and Allowances . . .	(*a*) 223,470	209,828	13,642	..
B.—Wages, &c., of Men, and hire of Teams	1,879,389	1,731,375	148,014	..
C.—Wages, &c., of Police Force . .	50,531	46,546	3,985	..
D.—Contingencies	2,400	2,400	..	..
Naval Yards Abroad.				
E.—Salaries and Allowances . . .	(*a*) 105,019	101,978	3,041	..
F.—Wages, &c., of Men, and hire of Teams	291,078	318,028	..	26,950
G.—Wages, &c., of Police Force . .	19,013	18,645	368	..
H.—Contingencies	800	600	200	..
£	2,571,700	2,429,400	169,250	26,950
Deduct,—				
I.—Appropriations in Aid . . .	21,800	21,800	..	..
£	2,549,900	2,407,600	169,250	26,950
		Net Decrease	. £142,300 (*b*)	

Note.—Provision has been made for New Construction in the above Vote to the extent of—

	£
Section 1	599,775
„ 2	438,680
„ 3	7,061,545
	£8,100,000

The difference (£13,202) between the provision under Section III. of the Vote (£7,061,545) and the amount shown in the Programme (£7,074,747) is due to the estimated withdrawals from Stock of transferable auxiliary machinery, gun mountings and steamboats during the year being in excess of the cash payments for like articles brought into Stock in the same period.

VOTE 8.—SHIPBUILDING, REPAIRS, MAINTENANCE, &c.—*continued.*

II.—SUB-HEADS under which SECTION II., MATÉRIEL, of this VOTE will be accounted for.

DOCKYARD WORK—*continued.*	ESTIMATES. 1907–1908.	ESTIMATES. 1906–1907.	Increase.	Decrease.
SECTION II.—MATÉRIEL.	£	£	£	£
Naval Stores, &c.				
A.—Timber, Masts, Deals, &c.	147,000	132,000	15,000	..
B.—Metals and Metal Articles	505,000	439,200	65,800	..
C.—Coal for Yard purposes	73,000	60,000	13,000	..
D.—Hemp, Canvas, &c.	98,000	163,500	..	65,500
E.—Paint Materials, Oils, Pitch, Tar, Tallow, Boats, Furniture, and other Miscellaneous Articles	289,000	378,500	..	89,500
F.—Electrical, Torpedo, and other Apparatus	365,300	306,200	59,100	..
G.—Freight	55,000	61,500	..	6,500
H.—Rents, Water, &c., Dockyards at Home, and Naval Yards Abroad	38,400	44,400	..	6,000
I.—Gas, Electric Light, &c., Dockyards at Home and Naval Yards Abroad.	17,500	35,900	..	18,400
£	1,588,200	1,621,200	152,900	185,900
Deduct—				
J.—Appropriations in Aid.	365,000	508,000	..	143,000
£	1,223,200	1,113,200	152,900	42,900
Coal, &c., for the Fleet.				
K. I.—Coal, &c., for the Fleet	1,480,000	1,399,000	81,000	..
K. II.—New Craft and machinery for Coaling, &c.	80,000	55,000	25,000	..
K. III.—Wages of crews and coaling labour	128,000	126,000	2,000	..
K. IV.—Maintenance of Craft for coaling, &c., and incidental expenses	71,500	79,500	..	8,000
K. V.—Lubricating Oils, &c., for the Fleet	72,500	74,500	..	2,000
£	1,832,000	1,734,000	108,000	10,000
Deduct—				
L.—Appropriations in Aid	20,000	20,000	..	..
£	1,812,000	1,714,000	108,000	10,000
£	3,035,200	2,827,200	260,900	52,900
		Net Decrease	**£208,000 (*a*)**	

(*a*) This Vote is increased by a sum of £2.5 under Naval Stores and of £25,000 under Subhead K II. in respect of Fixed Machinery formerly provided for by advances under the Naval Works Acts, 1895 to 1905, and decreased by a transfer of £7,000 to Vote 2 and £8,750 to Vote 5. There is therefore a real increase of £198,525.

VOTE 8.—SHIPBUILDING, REPAIRS, MAINTENANCE, &c.—*continued.*

II.—SUB-HEADS under which SECTION III., CONTRACT WORK, of this VOTE will be accounted for.

	ESTIMATES.		Increase.	Decrease.
	1907-1908.	1906-1907.		
	£	£	£	£
SECTION III.—CONTRACT WORK.				
A.—Propelling Machinery for His Majesty's Ships and Vessels . .	2,499,502	2,865,418	..	365,916
B.—Auxiliary Machinery for His Majesty's Ships and Vessels . .	132,755	139,899	..	7,144
C.—Hulls of Ships, &c., Building by Contract	1,830,352	1,866,728	..	36,376
D.—Armour for His Majesty's Ships and Vessels	986,451	1,554,600	..	568,149
E.—Repairs and Alterations by Contract of Ships, &c., and their Machinery and Stores	95,500	100,000	..	4,500
F.—Inspection of Contract Work . .	64,430	64,497	..	67
G.—Gun Mountings and Air-Compressing Machinery	1,858,210	2,037,478	..	179,268
H.—Machinery, &c., for His Majesty's Shore Establishments at Home and Abroad	130,000	75,000	55,000	..
H.H.—Fixed Machinery formerly provided for by Advances under the Naval Works Acts, 1895 to 1905 .	73,800	..	73,800	..
I.—Royal Reserve of Merchant Cruisers.	112,000	21,120	90,880	..
K.—Purchase of Ships, Vessels, &c. (Sub-Head D in 1905-6.) .	..	660	..	660
£	7,783,000	8,725,400	219,680	1,162,080
Deduct— L.—Appropriations in Aid . . .	137,000	137,000	..	..
£	7,646,000	8,588,400	219,680	1,162,080
	Net Decrease .		. £942,400 (*a*)	

(*a*) This Vote is increased by a sum of £73,800 (Sub-Head HH) in respect of Fixed Machinery formerly provided for by advances under the Naval Works Acts, 1895 to 1905. There is, therefore, a real decrease of £1,016,200.

PROGRAMME of the ESTIMATED EXPENDITURE in CASH, and in NET REPAIRS, MAINTENANCE, &c., (Exclusive of the FLEET

SUB-HEADS under which this ESTIMATED EXPENDITURE will be provisions of Section 1 (2), ARMY

	ESTIMATED EXPENDITURE IN				
	Direct Expenditure.				
	Dockyard Work.		Contract Work, Sec. III.	Total Direct Expenditure. (A)	
	Personnel, Sec. I.	Matériel, Sec. II.			
	£	£	£	£	
NEW CONSTRUCTION:					
A.—DOCKYARD-BUILT SHIPS—					
Hulls, &c. (*c*)	533,185	386,680	(*f*) 1,381,613	2,301,478	1
Machinery	37,015	23,140	711,252	771,407	2
	570,200	**409,820**	**2,092,865**	**3,072,885**	3
B.—CONTRACT-BUILT SHIPS—					
Hulls, &c. (*c*)	15,580	19,530	(*g*) 3,133,817	3,168,927	4
Machinery	..	..	1,793,531	1,793,531	5
	15,580	**19,530**	**4,927,348**	**4,962,458**	6
C.—SMALL VESSELS (*d*)	13,995	9,330	54,534	77,859	7
TOTAL NEW CONSTRUCTION	**599,775**	**438,680**	**7,074,747**	(*e*) **8,113,202**	8
D.—RE-CONSTRUCTION, REPAIRS, ALTERATIONS, &c.	1,016,350	430,150	353,698	1,800,198	9
E.—SEA STORES, &c.	..	734,200	37,670	771,870	10
F.—ESTABLISHMENT, INCIDENTAL, AND MISCELLANEOUS CHARGES, UNAPPROPRIATED	..	..	..	..	11
TOTAL £	**1,616,125**	**1,603,030**	**7,466,115**	**10,685,270**	12

(*c*) Including Hydraulic and Transferable Gun Mountings, &c.

(*d*) Including Harbour Craft, and excluding Torpedo Boats, &c.

(*e*) Exclusive of £2,200 provided under Vote 2 for new Lighters for Victualling Yard Service, £3,500 provided under Vote 9 for new Vessels for Naval Ordnance Store Service, £6,200 provided under Vote 10 for new Craft for Works Department, and £25 000 for Coaling Craft.

(*f*) Including £620,000 for Armour.

(*g*) Including £359,451 for Armour.

VALUES OF STORES issued for SHIPBUILDING, RE-CONSTRUCTION,
in the Year 1907–1908.
COALING SERVICE.)

accounted for in the NAVY EXPENSE ACCOUNTS, under the
AND NAVY AUDIT ACT, 1889.

	1907–1908.		EXPENDITURE AS ESTIMATED IN NAVY ESTIMATES, 1906–1907.			Difference between Direct Expenditure, 1906–1907 (B) and 1907–1908 (A).	
	Establishment, &c., Charges, apportioned.	Aggregate, 1907–1908.	Direct Expenditure. (B)	Establishment, &c., Charges, apportioned.	Aggregate, 1906–1907.	Increase.	Decrease.
	£	£	£	£	£	£	£
1	222,750	2,524,223	(h) 2,502,295	298,554	2,800,849	..	200,817
2	27,118	798,525	803,058	10,818	813,876	..	31,651
3	**249,868**	**3,322,753**	**3,305,353**	**309,372**	**3,614,725**	..	**232,468**
4	65,728	3,234,655	(i) 3,812,664	74,632	3,887,296	..	643,737
5	33,701	1,827,232	2,089,024	34,759	2,123,783	..	295,493
6	**99,429**	**5,061,887**	**5,901,688**	**109,391**	**6,011,079**	..	**939,230**
7	6,066	83,925	45,090	866	45,956	32,769	..
8	**355,363**	**8,468,565**	**9,252,131**	**419,629**	**9,671,760**	..	**1,138,929**
9	303,677	2,103,875	1,628,100	263,180	1,891,280	172,098	..
10	93,182	865,052	799,402	87,607	887,009	..	27,532
11	752,222 2,226,276	2,226,276	..	770,416 1,465,630	1,465,630	..	..
12	**2,978,498**	**13,663,768**	**11,679,633**	**2,236,046**	**13,915,679**	..	..

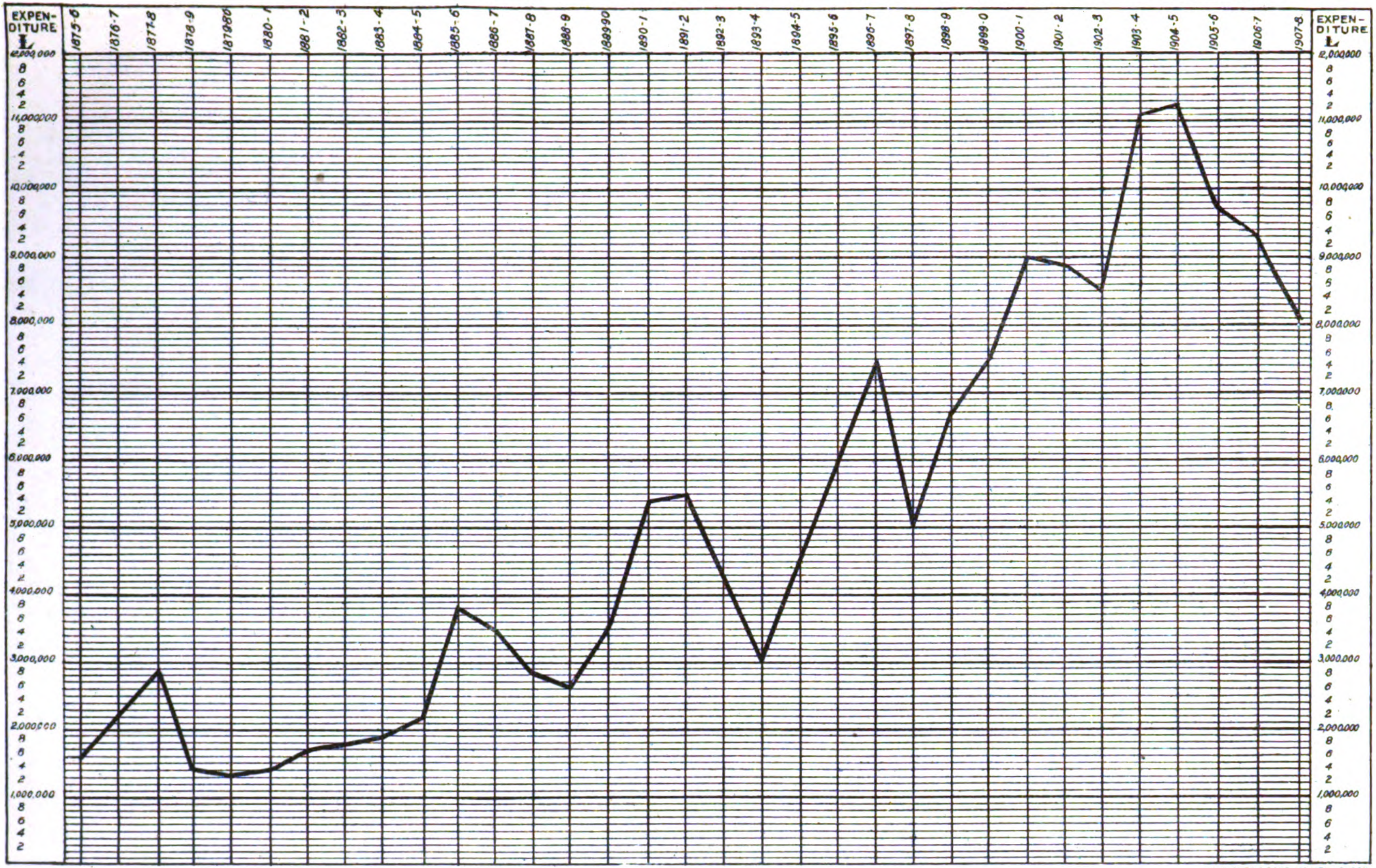
NET DECREASE ON DIRECT EXPENDITURE . . £994,363

(h) Including £590,700 for Armour.
(i) Including £953,900 for Armour.

RECAPITULATION OF ESTIMATED EXPENDITURE.

SUB-HEADS OF EXPENDITURE.	Total Direct Expenditure.	Establishment, etc., Charges Apportioned.	New Construction.	Re-construction, Repairs, etc.		Sea Stores, etc.	Establishment, Incidental, and Miscellaneous Charges Unappropriated.		Aggregate, 1907–8.
				Ships for Reliefs or Re-commission.	Ships in Commission and Reserve.				
DOCKYARD WORK—	£	£	£	£	£	£	£	£	£
Section I.—*Personnel* . .	1,616,125	1,149,389	731,447	405,295	786,669	58,293	490,895	292,915	2,765,514
Section II.—*Matériel* . .	1,603,030	1,353,105	529,434	203,262	349,684	769,089	435,353	849,518	2,956,135
CONTRACT WORK—									
Section III.	7,466,115	476,004	7,207,684	46,262	312,703	37,670	157,595	—	7,942,119
Total Estimated Expenditure for 1907–1908	10,685,270	2,978,498	8,468,565	654,819	1,449,056	865,052	1,083,843	1,142,433	13,663,768
Totals of Sub-Heads £	**13,663,768**		**8,468,565**	**2,103,875**		**865,052**	**2,226,276**		**13,663,768**

DIAGRAM SHEWING THE EXPENDITURE UPON THE CONSTRUCTION OF NEW SHIPS, DURING THE 33 YEARS BETWEEN 1875-76 & 1907-8.



Wm CLOWES & SONS, LTD LITH, LONDON

LIST of NEW SHIPS and VESSELS Estimated to be Passed into the RESERVE FLEET during the Years 1907–1908 and 1906–1907.

1907–1908.				1906–1907.			
NAME OF SHIP.	Load Displacement in Tons.	Indicated Horse Power.	Number of Guns.	NAME OF SHIP.	Load Displacement in Tons.	Indicated Horse Power.	Number of Guns.
ARMOURED SHIPS.				**ARMOURED SHIPS.**			
Agamemnon . . .	16,500	*16,750	14	Dreadnought . .	17,900	23,000	10
Lord Nelson . . .	16,500	*16,750	14	Africa	16,350	*18,000	18
Minotaur	14,600	27,000	14	Britannia	16,350	*18,000	18
Shannon	14,600	*27,000	14	Hibernia	16,350	*18,000	18
Warrior	13,550	*23,500	14	Achilles	13,550	*23,500	10
				Cochrane	13,550	*23,500	10
				Natal	13,550	*23,500	10
UNPROTECTED SHIPS.				**UNPROTECTED SHIPS.**			
Cyclops	..	*3,500 (Howden's)	..	FIRST-CLASS TORPEDO BOATS . 7	..	Various	..
Alexandra . . .	2,050	*4,500	..				
SPECIAL TYPE TORPEDO BOAT DESTROYER .	1,800 (estimated)	*30,000	4	SUBMARINE BOATS 11	..	..	..
OCEAN-GOING TORPEDO BOAT DESTROYERS . 5	..	Various	3 (each)				
FIRST-CLASS TORPEDO BOATS . 16	..	Various	..				
SUBMARINE BOATS 10	..	..	..				

* Forced draught.

Memorandum Showing Progress and Expenditure, &c., on Items included in the Naval Works Act.

Head (a).—ENCLOSURE AND DEFENCE OF HARBOURS.

GIBRALTAR HARBOUR.

Total Estimate in the Act 1905 is £1,199,000, but this will be slightly exceeded.

The work has been practically completed at a cost of about £1,206,000.

GIBRALTAR COMMERCIAL MOLE.

Total Estimate in the Act 1905, £669,000. It has been found possible to reduce this to £659,000, of which about £654,000 will be expended by March 31, 1907.

The Mole is completed and in use.

PORTLAND BREAKWATER.

Total Estimate in the Act 1905, £650,000. This has been slightly exceeded, the item having been completed at a cost of £652,000.

DOVER HARBOUR.

Total Estimate in the Act 1905, £3,500,000.

The estimated expenditure up to March 31, 1907, is about £3,059,000.

The date for completion given in the 1905 Act is 1908–9, but it will probably not be finished until 1909–10.

Good progress is being made with the Admiralty Pier Extension the east arm and the east reclamation. It is expected that a length of about 3950 feet of the south breakwater will be completed to about 8 feet above high water by June, 1907. Expenditure after 1906–7 will be charged to Navy Votes.

MALTA BREAKWATER.

Total Estimate in the Act 1905, £950,000. In consequence of the reduction of the Fleet in the Mediterranean, the scheme has been modified and its estimated cost reduced to about £625,000.

The expenditure incurred to March 31, 1907, is expected to be about £200,000.

The anticipated date of completion is 1909–10.

The main contract for the construction of Ricasoli and St. Elmo breakwaters was originally due for completion on August 1, 1907.

The contract has, however, been delayed by storms, which have done considerable damage to the temporary staging. An extension of time has therefore been allowed. The work of these breakwaters will probably not be finished until 1909–10.

Head (b).—ADAPTING NAVAL PORTS TO PRESENT NEEDS OF FLEET.

DEEPENING HARBOURS AND APPROACHES.

Total Estimate in the Act 1905, £1,360,000.

Of this sum about £1,342,000 is expected to be spent to March 31, 1907.

When the Naval Works Act, 1905, was framed, it was decided that after 1905–6 this work should be continued as a charge to Navy Vote 10, with the exception of the balances of contract dredging in hand amounting to about £20,000. There is expected to be a saving of about £14,000 on the above total estimate.

KEYHAM DOCKYARD EXTENSION.

Total Estimate in the Act 1905, £4,500,000.

The expenditure up to March 31, 1907, will be about £3,988,000.

The expected date of completion, as given in the 1905 Act, is 1908–9.

The main portion of the scheme is finished, but buildings and subsidiary services have yet to be carried out. It is anticipated that the entire work will not be completed until 1909–10.

A portion of the expenditure after 1906–7 will fall on Navy Votes.

PORTSMOUTH DOCKS.

This item has been completed.

GIBRALTAR DOCKYARD EXTENSION.

Total Estimate in the Act 1905 is £2,809,000, but it is now expected that in consequence of the omission of certain buildings, &c., the cost can be reduced to about £2,770,000.

Of this sum about £2,604,000 will be spent up to March 31, 1907.

The date for completion, given in the 1905 Act, is 1907–8, but the scheme will probably not be entirely finished until 1908–9.

The three graving docks are in use. The stores and shops are nearly completed and a large part in use. Residences are in course of erection.

HONG KONG DOCKYARD EXTENSION.

Total Estimate in the Act 1905, £1,500,000. The engineering difficulties in connection with the work will cause this amount to be exceeded by £64,000.

The expenditure incurred to March 31, 1907, is expected to be about £1,250,000.

The expected date of completion, as shown in the 1905 Act, is 1907–8, but owing to typhoon and other causes it is not anticipated that the entire work will be finished until 1908–9.

COLOMBO DOCK.

The Admiralty share of the cost of the dock, which is being carried out by the Colonial Government, is £159,000.

Of this sum about £154,000 is expected to be spent to March 31, 1907.

The expected date of completion, as shown in the 1905 Act, is 1905–6, but the work has not made such rapid progress as anticipated, and some supplementary contingent works have still to be completed by the Colonial Government.

PEMBROKE JETTY, &c.

Total Estimate in the Act 1905, £133,500.

The work has been completed.

PORTSMOUTH WIDENING CAISSON.

This item has been completed.

HAULBOWLINE IMPROVEMENTS.

This item has been completed.

CHATHAM DOCK.

Total Estimate in the Act 1905, £450,000.

It has been found possible to effect a slight saving on this amount. The work has been completed.

MALTA DOCKYARD EXTENSION.

Total Estimate in the Act 1905, £1,250,000, but in consequence of the reduction of the Fleet in the Mediterranean the scheme has been modified, and the cost will be reduced to about £1,200,000.

Of this sum about £1,079,000 is expected to be spent to March 31, 1907.

The anticipated date of completion, as shown in the 1905 Act, is 1907–8.

The work on the main contract in connection with the item comprising the construction of the two docks and pumping station should have been completed by the December 31, 1904, but the construction of these docks has been delayed by a variety of causes. They are now practically completed.

MAGAZINES.

Total Estimate in the Act 1905, £1,335,000. Various modifications to schemes have been effected, and the cost reduced to £1,158,000.

Of this sum about £1,039,000 is expected to be spent to March 31, 1907.

The anticipated date of completion, as shown in the 1905 Act, is 1909–10, but in view of the smaller amount of work to be carried out it is anticipated that the item will be finished in 1908–9.

COASTGUARD STATIONS AND R.N.R. BATTERIES.

Total Estimate in the Act 1905, £200,000.

The sum of about £152,000 is expected to be spent to March 31, 1907.

The date of completion is 1907–8. There is expected to be a saving of £40,000 on the total estimate.

TORPEDO RANGES.

Total Estimate in the Act 1905, £320,000. The schemes have been considerably reduced, and the cost is now expected to be about £115,000.

Of this sum about £30,000 is expected to be spent to March 31, 1907.

The anticipated date of completion, as shown in the 1905 Act, is 1908–9.

ELECTRIC LIGHT AND POWER IN NAVAL ESTABLISHMENTS.

Total Estimate in the Act 1905, £1,750,000. This has been reduced to £1,549,000.

Of this sum about £1,141,000 is expected to be spent to March 31, 1907.

The anticipated date of completion, as shown in the 1905 Act, is 1908–9.

Head (d).—SUPERINTENDENCE AND MISCELLANEOUS CHARGES.

Total Estimate in the Act 1905, £1,173,673. This has been reduced to about £964,000.

Of this sum about £785,000 is expected to be spent to March 31, 1907.

March, 1907.

STATEMENT showing the TOTAL ESTIMATED COST of each WORK, as shown in the Naval Works Act, 1905, and as subsequently revised, the ESTIMATED EXPENDITURE from LOAN FUNDS thereon during 1907-8 and 1908-9, and the expected DATE OF COMPLETION.

Description of Work.	Total Estimated Cost as shown in Naval Works Act, 1905.	Total Estimated Cost as revised.	Estimated Expenditure.		Expected Date of Completion.
			1907-8.	1908-9.	
(*a*) ENCLOSURE AND DEFENCE OF HARBOURS.	£	£	£	£	
Gibraltar	1,199,000	1,206,400	—	—	Completed
Gibraltar, Commercial Mole	669,000	659,000	5,000	—	1907-8
Portland	650,000	652,000	—	—	Completed
Dover	3,500,000	3,500,000	—	—	1909-10
Malta Breakwater	950,000	625,000	179,000	—	1909-10
(*b*) ADAPTING NAVAL PORTS TO PRESENT NEEDS OF FLEET.					
Deepening harbours and approaches	1,360,000	1,346,000	4,500	—	1907-8
Keyham Dockyard extension.	4,500,000	4,500,000	214,135	47,500	1909-10
Portsmouth Docks	372,502	372,502	—	—	Completed
Gibraltar Dockyard extension.	2,809,000	2,769,290	102,036	60,500	1908-9
HongKongDockyard extension	1,500,000	1,563,404	184,000	128,500	1908-9
Colombo Dock	159,000	159,000	5,000	—	1907-8
Pembroke Jetty, &c.	133,500	133,500	36,964	—	Completed
Portsmouth—WideningCaisson	40,466	40,466	—	—	Completed
Haulbowline improvements	62,602	62,602	—	—	Completed
Chatham Dock	450,000	448,352	—	—	Completed
Malta Dockyard extension	1,250,000	1,200,000	99,990	21,000	1908-9
Bermuda Dockyard extension	600,000	590,000	33,500	—	1907-8
Simon's Bay Dockyard extension, &c.	2,500,000	2,104,076	—	—	1909-10
Coaling facilities and fuel storage	1,280,000	1,020,000	—	—	1909-10
Chatham Dockyard extension	70,000	70,000	—	—	Completed
Sheerness Depôt for Torpedo Boat Destroyers	220,000	180,404	16,572	—	1907-8
Naval establishment at Rosyth	200,000	165,000	—	—	Completed
(*c*) NAVAL BARRACKS, &c.					
Chatham Naval Barracks	500,000	477,000	—	—	Completed
Gunnery Schools	470,000	170,000	60,169	15,000	1908-9
Portsmouth Naval Barracks	751,000	698,400	14,000	—	1907-8
Keyham Naval Barracks	281,000	244,000	—	—	Completed
Chatham Naval Hospital	404,000	405,684	—	—	Completed
Walmer Marine Depôt	17,658	17,658	—	—	Completed
Keyham Engineers' College	23,298	23,298	—	—	Completed
Britannia R.N. College	425,000	410,000	—	—	Completed
Magazines	1,335,000	1,158,048	84,032	34,990	1908-9
Haslar Hospital extension	67,978	67,978	—	—	Completed
Haulbowline Zymotic Hospital	12,856	12,856	—	—	Completed
CoastGuard Stations and Royal Naval Reserve Batteries	200,000	160,000	7,662	—	1907-8
Torpedo Ranges	320,000	115,000	38,351	47,000	1908-9
Electric light and power in Naval Establishments	1,750,000	1,549,000	342,672	65,000	1908-9
(*d*) SUPERINTENDENCE AND MISCELLANEOUS CHARGES	1,173,673	964,082	50,417	18,510	—
	32,206,933	29,840,000	1,478,000	438,000	—
			£1,916,000		

RETURNS OF GUNNERY AND GUNNERY PRACTICE.

Results of Test of Gunlayers in H.M. Fleet, 1897–1906.

	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.
Number of ships that fired	109	139	136	121	127	139	134	108	100	89
Number of guns . .	846	1,010	1,121	1,031	1,137	1,241	1,296	1,171	1,096	1,073
Number of hits . . .	2,052	2,527	2,831	2,732	3,562	4,789	5,996	5,748	4,374	5,733
Number of misses . .	4,389	5,436	6,249	5,709	6,244	6,863	7,028	7,664	3,357	2,328
Excess of hits over misses	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1,017	3,405
Excess of misses over hits	2,337	2,909	3,418	2,977	2,682	2,074	1,032	1,916	Nil	Nil
Percentage of hits to rounds fired. . .	31·86	31·63	31·1	32·3	36·3	41·1	46·04	42·86	56·58	71·12
Hits per gun per minute—										
12″ and 10″ VI. and VII.	·09	·23	·29	·30	·33	·38	·53	·47	·58	·81
9·2″	·17	·32	·23	·22	·31	·35	·70	·73	1·40	2·84
6″ Q.F. and B.L. . .	·89	1·11	1·05	1·51	1·81	2·41	2·63	2·63	4·14	5·68
4·7″ and 4″ Q.F. . .	1·83	1·68	1·82	1·60	1·93	2·02	2·47	2·28	3·73	4·96
Number of ships from whom no returns were received . .	20	33	32	39	47	19	30	43	Nil	Nil

---

Abstract, 1906.

Order of Merit.	Fleet or Squadron.	No. of Ships.	No. of Men Firing.	Points per Man.	First Ship in Fleet.	Scores.
1	Second Cruiser .	6	86	98·741	Drake . . .	124·49
2	Mediterranean . .	11	137	93·539	Formidable .	118·31
3	Third Cruiser . .	5	60	90·890	Carnarvon .	114·15
4	Atlantic	11	156	88·557	King Edward VII. . .	123·09
5	First Cruiser . .	6	68	86·648	Hampshire .	107·52
6	China	6	84	82·228	King Alfred .	102·27
7	Channel	21	288	72·266	Exmouth . .	109·03
8	Tenders, &c. . . .	4	12	71·096	Shearwater .	104·65
9	Cape of Good Hope .	4	39	64·441	Crescent . .	88·13
10	N. A. and W.I. . .	2	16	62·019	Indefatigable .	66·06
11	Australia	9	90	58·507	Prometheus .	84·53
12	East Indies . . .	4	37	56·728	Fox. . . .	79·02
	Total . . .	89	1,073	80·065		
	Total, 1905 .	100	1,096	68·26		

TEST OF GUNLAYERS, 1906.

12-in. B.L. Marks VIII. and IX.

Time—1 Run of 2¾ minutes per Turret.

Ship.	Station.	Total Number of			Average per Turret per Minute.	
		Turrets.	Rounds.	Hits.	Rounds.	Hits.
Exmouth . . .	Channel . .	2	19	16	3·45	2·91
Totals 1906 .		60	422	269	2·558	1·63
„ 1905* .		62	518	218	2·785	1·172
Difference .		−2	−96	−51	−6·227	+0·458

* In 1905 each turret had a run of 3 minutes.

Gun.	Ship.	Squadron.	Guns.	Total Number of		Average per gun per minute.	
				Rounds.	Hits.	Rounds.	Hits.
9·2-in., Mark VIII. & X.	Drake	2nd Cruiser	2	18	17	4·50	4·25
Totals 1906 . . .			42	292	242	3·476	2·881
„ 1905*. . .			32	257	112	3·213	1·401
Difference . . .			+10	+35	+130	+0·263	+1·481
7·5-in.	Argyll	1st Cruiser	4	43	35	6·14	5·00
Totals 1906 . . .			52	401	294	4·407	3·231
„ 1905†. . .			44	368	180	4·182	2·045
Difference . . .			+8	+33	+114	+0·225	+1·186
6-in., Mark XI.‡ . .	Duke of Edinburgh	2nd Cruiser	10	81	71	8 10	7·10
Totals 1906 . . .			20	152	131	7·600	6·551
6-in., Mark VII. & VIII.	King Edward VII.	Atlantic .	10	101	87	10·10	8·70
Totals 1906 . . .			467	3687	2788	7·895	5·971
„ 1905 . . .			521	3400	2136	6·526	4·101
Difference . . .			−54	+287	+652	+1·369	+1·871
6-in. Q.F.	Majestic . . .	Atlantic .	12	108	88	9·00	7·33
Totals 1906 . . .			239	1616	1205	6·700	4·223
„ 1905 . . .			227	1521	958	6·700	4·223
Difference . . .			+12	+95	+247	+0·062	+0819

* In 1905 each gun had a run of 2¼ minutes, and in 1906 of 2 minutes.
† In 1905 each gun had a run of 2 minutes, and in 1906 of 1¾ minutes.
‡ No guns of this nature fired in 1905.

ORDER OF MERIT OF SHIPS COMPETING.

Order of Merit.	Ships.	Points.	No. of Men Firing.	Nature of Gun.	Rounds Fired.	Hits made.
1	**DRAKE**	124·49	2	9·2″ Mark X.	18	17
			16	6″ B.L. VII. (*b*)	149	129
2	King Edward VII.	123·09	2	12″ Mark IX.	14	13
			4	9·2″ Mark X.	33	30
			10	6″ B.L. VII. (*a*)	101	87
3	Cumberland	121·28	12	6″ B.L. VII. (*b*)	113	95
4	Formidable	118·31	2	12″ Mark IX.	11	6
			12	6″ B.L. VII. (*b*)	119	103
5	Hindustan	114·94	2	12″ Mark IX.	16	10
			4	9·2″ Mark X.	34	33
			10	6″ B.L. VII. (*a*)	90	78
6	Carnarvon	114·15	4	7·5 B.L.	38	32
			6	6″ B.L. VII. (*a*)	47	46
7	Duke of Edinburgh	110·77	6	9·2″ Mark X.	51	44
			10	6″ B.L. XI. (*a*)	81	71
8	Exmouth	109·03	2	12″ Mark IX.	19	16
			12	6″ B.L. VII. (*b*)	119	86
9	Venus	108·63	11	6″ B.L. VII. (*b*)	96	78
10	Hampshire	107·52	4	7·5″ B.L.	40	35
			6	6″ B.L. VII. (*a*)	50	39
11	Diana	105·85	11	6″ B.L. VII. (*b*)	99	76
12	Majestic	104·98	2	12″ Mark VIII.	18	12
			12	6″ Q.F.	108	88
13	Shearwater	104·65	6	4″ Q.F.	49	39
14	King Alfred	102·27	2	9·2″ Mark X.	11	10
			16	6″ B.L. VII. (*b*)	130	110
15	Good Hope	101·44	2	9·2″ Mark X.	16	12
			16	6″ B.L. VII. (*b*)	131	107
16	Bulwark	99·35	2	12″ Mark IX.	20	15
			12	6″ B.L. VII. (*b*)	98	78
17	Minerva	97·49	11	6″ B.L. VII. (*b*)	101	70
18	Kent	95·75	12	6″ B.L. VII. (*b*)	92	75
19	Leviathan	94·61	2	9·2″ Mark X.	16	10
			16	6″ B.L. VII. (*b*)	133	101
20	Vulcan	94·41	8	4·7″ Q.F.	70	57
21	Canopus	94·05	2	12″ Mark VIII.	14	6
			12	6″ Q.F.	93	83
22	Barham	92·75	6	4·7″ Q.F.	58	42
23	New Zealand	92·03	2	12″ Mark IX.	17	15
			4	9·2″ Mark X.	26	21
			10	6″ B.L. VII. (*a*)	73	62
24	Lancaster	90·64	12	6″ B.L. VII. (*b*)	86	71
25	Magnificent	90·19	2	12″ Mark VIII.	16	11
			12	6″ Q.F.	92	75
26	Devonshire	88·78	4	7·5″ B.L.	34	28
			6	6″ B.L. VII. (*a*)	37	33
27	Crescent	88·13	1	9·2″ B.L. VI. (*c*)	9	7
			12	6″ Q.F.	100	70
28	Russell	87·51	2	12″ Mark IX.	13	7
			12	6″ B.L. VII. (*b*)	94	74
29	Montagu	87·35	2	12″ Mark IX.	13	8
			12	6″ B.L. VII. (*b*)	105	73
30	Irresistible	86·25	2	12″ Mark IX.	18	8
			12	6″ B.L. VII. (*b*)	100	72
31	London	85·32	2	12″ Mark IX.	14	7
			12	6″ B.L. VII. (*b*)	95	72
32	Prometheus	84·53	8	4″ Q.F.	61	43

(*a*) Using full or two-third charges. (*b*) Using half charges.

ORDER OF MERIT—*continued.*

Order of Merit.	Ships.	Points.	No. of Men Firing.	Nature of Gun.	Rounds Fired.	Hits made.
33	Cæsar	84·19	2	12″ Mark VIII.	13	8
			12	6″ Q.F.	81	72
34	Commonwealth	83·82	2	12″ Mark IX.	18	12
			4	9·2″ Mark X.	26	20
			10	6″ B.L. VII. (*a*)	75	57
35	Venerable	83·74	2	12″ Mark IX.	16	10
			12	6″ B.L. VII. (*b*)	88	68
36	Juno	83·56	11	6″ B.L. VII. (*b*)	86	60
37	Topaze	83·18	12	4″ Q.F.	89	62
38	Diadem	82·06	16	6″ Q.F.	108	88
39	Prince George	81·66	2	12″ Mark VIII.	15	11
			12	6″ Q.F.	80	67
40	Implacable	81·43	2	12″ Mark IX.	12	4
			12	6″ B.L. VII. (*b*)	94	71
41	Powerful	81·41	2	9·2″ Mark VIII.	6	5
			16	6″ Q.F.	110	93
42	Cornwallis	80·94	2	12″ Mark IX.	14	7
			12	6″ B.L. VII. (*b*)	90	68
43	Fox	79·02	2	6″ Q.F.	17	13
			8	4·7″ Q.F.	85	45
44	Black Prince	77·87	6	9·2″ Mark X.	32	21
			10	6″ B.L. XI. (*a*)	71	60
45	Andromeda	77·40	16	6″ Q.F.	109	83
46	Dominion	76·15	2	12″ Mark IX.	15	12
			4	9·2″ Mark X.	23	19
			10	6″ B.L. VII. (*a*)	63	50
47	Queen	76·08	2	12″ Mark IX.	12	10
			12	6″ B.L. VII. (*b*)	85	61
48	Berwick	75·32	12	6″ B.L. VII. (*b*)	83	59
49	Vengeance	75·13	2	12″ Mark VIII.	11	4
			12	6″ Q.F.	79	67
50	Argyll	73·82	4	7·5″ B.L.	43	35
			6	6″ B.L. VII. (*a*)	39	17
51	Albemarle	73·44	2	12″ Mark IX.	10	6
			12	6″ B.L. VII. (*b*)	87	62
52	Skipjack	72·88	2	4·7″ Q.F.	18	11
53	Cornwall	72·77	12	6″ B.L. VII. (*b*)	94	57
54	Roxburgh	72·59	4	7·5″ B.L.	33	24
			6	6″ B.L. VII. (*a*)	37	26
55	Challenger	72·42	11	6″ B.L. VII.	82	52
56	Victorious	72·07	2	12″ Mark VIII.	15	11
			12	6″ Q.F.	81	58
57	Amethyst	68·43	12	4″ Q.F.	97	51
58	Dido	68·24	11	6″ B.L. VII. (*b*)	71	49
59	Triumph	67·53	2	10″ Mark VII.	9	7
			14	7·5″ B.L.	112	72
60	Arrogant	67·14	10	6″ Q.F.	69	45
61	Sapphire	67·08	12	4″ Q.F.	89	50
62	Jupiter	66·88	2	12″ Mark VIII.	13	10
			12	6″ Q.F.	72	54
63	Indefatigable	66·06	2	6″ Q.F.	13	7
			6	4·7″ Q.F.	58	32
64	Flora	64·60	2	6″ Q.F.	8	6
			8	4·7″ Q.F.	62	42
65	Antrim	63·90	4	7·5″ B.L.	33	21
			6	6″ B.L. VII. (*a*)	38	23
66	Suffolk	63·83	12	6″ B.L. VII. (*b*)	77	50
67	Encounter	62·67	11	6″ B.L. VII. (*b*)	72	45
68	Diamond	61·72	12	4″ Q.F.	95	46

(*a*) Using full or two-third charges. (*b*) Using half charges.

ORDER OF MERIT—*continued.*

Order of Merit.	Ships.	Points.	No. of Men Firing.	Nature of Gun.	Rounds Fired.	Hits made.
69	Duncan	60·47	2	12″ Mark IX.	10	5
			12	6″ B.L. VII. (*b*)	85	51
70	Monmouth	60·00	12	6″ B.L. VII. (*b*)	83	47
71	Illustrious	59·15	2	12″ Mark VIII.	9	4
			12	6″ Q.F.	67	52
72	Pyramus	58·36	8	4″ Q.F.	53	29
73	Forte	58·31	2	6″ Q.F.	13	8
			8	4·7″ Q.F.	71	35
74	Brilliante	57·98	2	6″ Q.F.	12	8
			6	4·7″ Q.F.	51	26
75	Proserpine	56·35	8	4″ Q.F.	51	28
76	Goliath	56·22	2	12″ Mark VIII.	16	10
			12	6″ Q.F.	79	44
77	Terpsichore	51·76	2	6″ Q.F.	8	2
			6	4·7″ Q.F.	54	29
78	Hermes	50·19	11	6″ Q.F.	68	37
79	Ocean	49·56	2	12″ Mark VIII.	9	4
			12	6″ Q.F.	75	43
80	Pelorus	46·29	8	4″ Q.F.	52	23
81	Glory	45·96	2	12″ Mark VIII.	11	7
			12	6″ Q.F.	65	37
82	Swiftsure	43·58	2	10″ Mark VI.	13	4
			14	7·5 B.L.	68	47
83	Perseus	38·24	8	4″ Q.F.	59	19
	Pegasus	38·24	8	4″ Q.F.	58	19
	Psyche	38·24	8	4″ Q.F.	51	19
86	Cambrian	36·61	2	6″ Q.F.	9	5
			8	4·7″ Q.F.	60	22
87	Pioneer	24·15	8	4″ Q.F.	46	12
88	Halcyon	19·88	2	4·7″ Q.F.	14	3
	Leda	19·88	2	4·7″ Q.F.	9	3

(*a*) Using full or two-third charges.

(*b*) Using half charges.

BATTLE PRACTICE.

Abstract of Results of Battle Practice in H.M. Fleet, 1906

(With average points obtained in 1905).

Order of Merit.	Squadron.	No. of Ships.	No. of Guns.	Average Points.		First Ship in Squadron.	Score.
				1906.	1905.		
1	2nd class Cruiser Squadron . . .	6	92	264·7	54·0	Drake	478·3
2	China Fleet . . .	5	72	250·6	65·3	King Alfred . .	341·7
3	Atlantic Fleet . . .	9	140	233·2	91·8	Britannia . . .	410·0
4	East Indies. . . .	3	29	203·6	37·6	Fox	221·4
5	Mediterranean . . .	8	113	203·0	133·1	Bulwark . . .	363·2
6	Cape of Good Hope Squadron . . .	4	39	180·8	31·5	Forte	221·4
7	Channel Fleet . . .	20	306	146·0	157·0	Exmouth . . .	351·5
8	1st Cruiser Squadron.	4	48	140·1	47·5	Devonshire . .	188·6
9	3rd Cruiser Squadron.	4	56	92·2	147·9	Leviathan . .	177·7
10	Australia	4	50	78·7	46·8	Challenger . .	178·9
	Total 1906 . .	67	945	181·7	98·4		
	Total 1905 . .	68	957	—	—		

Austro-Hungarian Navy Estimates, 1907.

(Converted at £1 = 24 Kronen.

ORDINARY ESTIMATES.

		£
Pay of officers, etc.		187,725
Pay and clothing—petty officers and seamen		164,884
Land service		87,216
Sea service		228,804
Shore establishments		24,817
Maintenance of Fleet		394,916
New Construction, viz.:—		
(1) Hulls and Machinery	**Battleship I., 14,500 tons, 1st instalment**	166,667
	" II., " "	104,167
	" III., " "	41,667
	Cruiser F, 1st instalment	41,666
(2) Gun and torpedo fittings, &c.—Battleships I. and II.		62,500
Guns and small arms		120,833
Miscellaneous		169,768
		1,795,630
Less special receipts		10,208
		1,785,422

EXTRAORDINARY ESTIMATES.

	£	
Shore establishments	4,167	
Floating-dock	41,667	
Guns and small arms	32,500	
Buildings	15,812	
Miscellaneous	12,099	106,245
Total of Ordinary and Extraordinary Estimates		£1,891,667

French Navy Estimates, 1907.

Cap. in Estimates, 1907.	Heads of Expenditure.	Credits voted for 1907.	Credits voted for 1906.
	PERSONNEL.	£	£
1, 2	Admiralty Office	145,019	141,139
5, 6, 7	Navy Pay	2,172,628	2,135,561
8	Inspection of Administrative Services	13,138	13,137
9, 10	Construction and Ordnance Staff	286,347	294,507
11, 12, 14, 15	Administrative Staff, Commissariat, and Inscription Maritime	289,314	291,256
13	Medical and Religious Staff	70,022	72,566
51	Fisheries and Navigation	31,125	29,769
	LABOUR.		
	Wages—		
27	Shipbuilding; new construction; fitting for sea	485,200	489,297
29	Shipbuilding; repairs	236,000	286,934
24, 31	Master-attendants' and Storekeepers' Departments	267,043	277,530
35	Armaments; construction of new guns	94,365	102,365
37, 39	Armaments; repairs	109,231	99,122
42	Works	26,000	26,783
18	Victualling	32,400	32,800
20	Hospitals, &c.	16,780	16,780
	MATÉRIEL.		
	Stores and Supplies—		
3	Admiralty	10,077	10,122
28	Shipbuilding in Dockyards	1,612,800	1,866,846
33, 34	Shipbuilding by contract	1,417,600	1,840,000
30, 32	Fitting for sea; maintenance; repairs	540,000	598,987
	Carried forward	£7,855,089	£8,575,501

Cap. in Estimates, 1907.	Heads of Expenditure.	Credits voted for 1907.	Credits voted for 1906.
		£	£
	Brought forward - -	7,855,089	8,575,501
	MATÉRIEL—*continued.*		
	Stores and Supplies—*continued.*		
25, 26	Repairs, conversions, &c., in dockyards and by contract	614,407	616,676
36, 38 40	Armaments; new guns and conversions; Powder, ammunition, repairs, tools, &c.	1,212,552	919,399
43	Works; new and large alterations. .	102,600	113,124
41, 44	Ditto; supplementary for defence of military ports	614,000	701,918
45, 46	Ditto; repairs	67,055	67,141
4	Hydrographic Service	13,600	15,320
16	Clothing, &c.	137,412	134,278
17, 19	Victualling	883,740	886,817
21	Hospitals, &c.	75,585	76,424
47, 48	Fuel, lighting, office furniture, printing, &c.	43,930	42,714
	MISCELLANEOUS.		
22, 23	Travelling expenses, freight, allowance for lodgings, &c.	199,720	217,000
49	Charitable and subscriptions . . .	43,590	42,493
50	Pay of Reserve Officers	33,011	29,854
52, 54	Fisheries and Commerce (materials for protection, &c.)	18,440	16,200
53 *a*	School Ship hired from Mercantile Marine	—	1,740
53 *b* & *c*	Milan and Marseilles Exhibitions . .	—	1,000
53	Bordeaux Exhibition	400	—
55	Pensions	537,661	510,078
56	Secret Service	4,000	4,000
	Total . .	£12,486,792	£13,001,677

Programme of New Construction, to be continued or undertaken in 1907.—Building in Dockyards.

Class.	Names of Ships.	Where Building.	Date of Commencement.	Proposed Date of Completion.	Estimated Cost.	Probable Expenditure in 1907.
					£	£
Battleships. . .	République . .	Brest. .	1901	1906	1,523,136	34,830
	Démocratie . .	,, . .	1903	1907	1,473,180	73,755
	Danton (ex A 15)	,, . .	1907	1910	1,803,224	271,762
	Mirabeau (ex A. 15^{bis})	Lorient .	1907	1910	1,803,224	265,574
Armoured Cruisers, First-class .	Victor Hugo . .	,, .	1903	—	1,229,932	14,040
	Jules Michelet .	,, .	1904	1908	1,204,107	124,116
	Edgar Quinet .	Brest. .	1905	1909	1,307,536	352,850
	WaldeckRousseau	Lorient .	1905	1910	1,301,380	285,144
Torpedo-boat Destroyers .	Stylet	Rochefort	1904	1906	59,333	5,200
	Tromblon . . .	,,	1904	1906	59,203	4,640
	Pierrier . . .	,,	1904	1907	56,589	10,564
	Mortier . . .	,,	1904	1907	60,069	370
	Carquois . . .	,,	1905	1907	60,634	740
	Trident . . .	,,	1905	1907	60,634	2,422
	Fleuret . . .	,,	1905	1907	57,552	22,811
	Coutelas . . .	,,	1905	1907	57,552	24,349
	Glaive. . . .	,,	1905	1907	61,032	23,665
	Poignard . . .	,,	1905	1907	61,032	24,029
	Cognée . . .	Toulon .	1905	1908	57,552	31,335
	Hache . . .	,, .	1905	1908	57,552	31,673
	Massue . . .	,, .	1905	1908	57,552	31,829
Submersible . .	Oméga . . .	,, .	1904	1907	63,360	16,656
Submarines . .	Émeraude . . Opale . . . . Rubis	Cherbourg	1904	1907	191,000	670
	Saphir. . . . Topaze . . . Turquoise. . .	Toulon .	1905	1907	210,932	71,204
Submersibles . .	Circé . . . . Calypso . . .	,, .	1905	1908	144,614	51,922
Submarines . .	Guêpe, Nos. 1 & 2	Cherbourg	1908	1909	25,020	4,300
Submersibles . .	38 (Q. 51-60 & 62-89)	Various .	1905–6	1908–10	2,623,139	518,816
Submarines . .	10 (Q. 90–99) .	,, .	1907	1909–11	1,168,610	54,172
First-class Torpedo-boats .	Nos. 368 and 369.	Toulon .	1904	1906	39,873	1,504
	Total building in Dockyards			£	16,878,553	2,354,972

PROGRAMME OF NEW CONSTRUCTION, TO BE CONTINUED OR UNDERTAKEN IN 1907.—BUILDING BY CONTRACT.

Class.	Names of Ships.	Where Building.	Date of Commencement.	Proposed Date of Completion.	Estimated Cost.	Probable Expenditure in 1907.
					£	£
Battleships . .	Patrie . . .	La Seyne—Toulon . .	1901	1906	1,674,870	91,163
	Liberté . . .	St. Nazaire—Brest . .	1902	1907	1,652,436	166,081
	Justice . . .	La Seyne—Toulon . .	1902	1907	1,670,385	186,697
	Vérité . . .	Bordeaux—Brest . .	1902	1908	1,661,409	180,827
	Voltaire (ex A 16)	—	1906	1911	2,000,824	184,947
	Diderot (ex A 16 *bis*)	—	1906	1911	2,000,824	184,947
	Condorcet (ex A 17)	—	1906	1911	2,000,824	184,947
	Vergniaud (ex A 17 *bis*)	—	1906	1911	2,000,824	184,947
First-class Armoured Cruiser	Ernest Renan .	St. Nazaire—Lorient .	1903	1908	1,409,958	150,217
Torpedo Boat Destroyers	Sabretache . . Oriflamme . .	Nantes—Lorient. . .	1905	1908	103,127	20,095
	Etendard (ex M 40) Fanion (ex M 50)	Bordeaux—Rochefort .	1905	1908	111,047	22,498
	Sape (ex M 51) . Gabion (ex M 52)	Rouen—Cherbourg . .	1905	1907	120,007	43,269
	Branlebas (ex M 53) Fanfare (ex M 54)	Le Havre—Cherbourg .	1905	1908	131,207	39,334
	M 55 to M 60 (6)	—	1906	1909	469,536	119,860
	M 61 to M 65 (5)	—	1907	1910	394,527	83,139
Torpedo Boats .	318 to 321 (4) (ex P 139-42)	Le Havre—Cherbourg .	1904	1907	83,780	12,450
	329 to 331 (3) (ex P 150-2)	Bordeaux—Rochefort .	1904	1907	51,480	5,760
	332 to 337 (6) (ex P 153-58)	" " .	1904	1907	109,672	23,520
	346 (ex P 167) .	Le Havre—Cherbourg .	1904	1907	18,225	2,400
	349 to 352 (ex P 170-3)	Nantes—Lorient . .	1904	1907	73,383	9,600
	356 to 358 (ex P 177-9)	Chalon—Toulon . .	1904	1907	54,518	7,200
	365 to 367 (ex P 186-8)	Rouen—Cherbourg . .	1904	1907	54,804	7,302
	Total building by Contract				£17,850,672	1,911,190

German Navy Estimates, 1907.

(*Converted at* £1 = 20·43 *marks.*)

ORDINARY PERMANENT ESTIMATES.

Heads of Expenditure.	Proposed for the financial year 1907.	Granted for the financial year 1906.
	£	£
Imperial Navy Office	92,929	87,773
Admiralty Staff	15,141	16,254
Look-out Stations and Observatories	17,912	17,444
Station Superintendencies	30,247	28,336
Administration of Justice	8,336	8,262
Naval Chaplains and Garrison Schools	6,813	6,612
Navy Pay	1,420,982	1,322,472
Maintenance of Ships in Commission	1,527,027	1,401,393
Victualling	106,528	101,092
Clothing	21,551	20,183
Garrison Works and Administration	79,870	73,091
Lodging Allowance	125,161	117,002
Medical Department	113,448	103,370
Travelling Expenses, Freight Charges, &c.	166,960	168,673
Training Establishments	24,109	19,823
Maintenance of Fleet and Docks	1,447,796	1,373,603
Ordnance and Fortification	547,905	505,084
Accountants' Department	45,064	42,746
Pilotage, Coastguard, and Surveying Service	35,780	34,718
Miscellaneous Expenses	76,426	73,367
Total of Ordinary Permanent Estimates carried to next page £	5,910,045	5,521,298
Administration of Kiau-chau Protectorate	5,085	5,000
	5,915,130	5,526,298

SPECIAL ORDINARY ESTIMATES.

Shipbuilding Programme for the Financial Year 1907.

For the Construction of—

	£
Battleship Pommern (O), 4th and final instalment	115,027
„ Hannover (P), „	115,027
Large cruiser Gneisenau (C), „	73,422
Battleship Q, 3rd instalment	227,606
„ Schlesien (R), 3rd instalment	227,606
Large cruiser Scharnhorst (D), 3rd instalment	209,006
Small cruiser Stuttgart (O), 3rd and final instalment	53,353
„ Ersatz Wacht, „	53,353
„ Nürnberg (Ersatz Blitz), „	53,353
Battleship Ersatz Bayern, 2nd instalment	420,949
„ Ersatz Sachsen „	420,949
Large cruiser (E), „	293,688
Small cruiser Ersatz Pfeil „	118,942
„ Ersatz Comet „	118,942
Steamer for laying mines (B), 2nd and final instalment	58,737
Alteration and improvement of large cruisers Hertha and Victoria Louise, 2nd and final instalment	122,370
Battleship Ersatz Württemberg, 1st instalment	146,844
„ Ersatz Baden, 1st instalment	146,844
Large cruiser F, 1st instalment	146,844
Small cruiser Ersatz Greif, 1st instalment	73,422
„ Ersatz Jagd, „	73,422
Fitting harbour-ship König Wilhelm as training ship for boys	19,579
Design for sailing yacht Ersatz Wille	1,468
Alteration and improvement of large cruiser Hansa	36,710
One tender Ersatz Ulan	24,474
One Torpedo-boat Division, 2nd and final instalment	313,265
„ „ „ 1st instalment	391,584
Experiments with designs for Submarines	146,844
Total	£4,203,630

SUMMARY.

	Proposed for the financial year 1907.	Granted for the financial year 1906.
	£	£
Ordinary Permanent Estimates	5,910,045	5,521,298
New Construction	4,203,630	3,596,433
Armaments, Torpedoes, and Mines	2,084,680	1,748,654
Other items	387,785	344,500
Extraordinary Expenditure	1,042,107	1,137,543
Total £	13,628,247	12,348,428

Italian Navy Estimates, 1907-8.

FINANCIAL YEAR 1ST JULY, 1907, TO 30TH JUNE, 1908.

(Converted at £1 = 25 lire.)

——	Proposed for 1907–1908.	Revised Estimates, 1906–1907.
ORDINARY EXPENDITURE—GENERAL EXPENSES.	£	£
Admiralty	95,922	98,344
Pensions	276,080	266,000
Expenditure for the Mercantile Marine	394,674	392,854
Total £	766,676	757,198
EXPENDITURE FOR NAVAL SERVICES.	£	£
General Staff of the Navy	154,000	145,320
Corps of Constructors	58,160	55,600
Medical Service	29,600	28,560
Commissariat Service	36,320	34,360
Pay of Officers, and Wages of Men	513,200	529,120
Gratuities, &c.	148,000	82,200
Forts—*Personnel*	15,200	15,200
Telegraph Service—*Personnel*	9,520	8,600
,, ,, *Matériel*	6,600	10,000
Police (Dockyards)	11,440	11,200
Salaries and Office Expenses	7,656	7,200
Barracks, Maintenance, Lighting, etc.	7,200	5,160
Rents and Water Royalties	2,680	2,720
Ships fitting out, &c.	289,200	276,000
Fuel and Stores, for Ships in Commission	319,000	318,000
Victualling	345,560	348,420
Hospital Services	22,000	22,000
Naval Academy and Engineering School	16,180	15,840
Scientific Services—*Personnel*	972	972
,, ,, *Matériel*	9,710	9,710
Workshops, Fortifications, and Stores—*Personnel*	63,096	62,140
Technical Department (Civil)—*Personnel*	38,520	38,920
Naval Constructors	21,920	21,720
Law Charges	1,320	1,320
Transport of Materials	5,800	5,000
Works Department—Repairs	102,160	98,160
Plant, Machinery and Tools; Reconstruction and maintenance of Workshops	72,000	62,000
Electric Power, Fuel and Stores for Shore Establishments	60,000	60,000
Materials for construction of new Ships and maintenance of existing Ships—Hulls, Machinery, and Armaments	887,223	965,914
Wages and Expenses of Dockyard employés	676,240	698,800
Guns, Torpedoes and Small Arms	108,000	108,000
Labour in Private Yards	12,000	10,000
Coast Defence—*Matériel*	12,000	12,000
Total (to next page)	£ 4,062,477	4,070,156

The Estimates for 1907-8 provide for completion of battleship Vittorio Emanuele at Naples; continuation of battleships Roma at Spezia, and Napoli at Genoa; continuation of cruiser S. Marco, at Castellamare; commencement of battleship A; completion of four sea-going torpedo-boats, of 210 tons, Orione class, 2 lake gunboats, and various auxiliary vessels.

EXTRAORDINARY EXPENDITURE.

——	Proposed for 1907–1908.	Revised Estimates, 1906–1907.
	£	£
Temporary Civil Staff	12,400	14,200
General Expenses and Half Pay	600	600
Construction and purchase of Ships and Materials for the Navy (Law of July 2, 1905)	480,000	480,000
Reorganization of Storehouses and Bakeries	20,000	..
„ „ Ammunition Depôts	18,000	..
Works required at Naval Depôts	16,680	..
Total	£ 547,680	494,800

SUMMARY.

	£	£
Ordinary Expenditure—General Expenses	766,676	757,198
Expenditure for Naval Services	4,062,477	4,070,156
Extraordinary Expenses	547,680	494,800
Depreciation of Ships in Commission	140,000	140,000
Rent of Lands occupied by Government	108,087	108,004
Grand Total	£ 5,624,920	5,570,158

Russian Navy Estimates, 1907.

(*Converted at* £1 = 9·6 *Roubles.*)

Heads of Expenditure.	Proposed for **1907.**	Budget of **1906.**
	£	£
Central and Ports Administration	370,899	369,275
Clothing	315,586	220,916
Victualling	156,600	192,758
Pay	634,834	602,874
Special Training of Men	51,764	44,077
Transport, Travelling and Despatches	135,552	136,134
Maintenance of Ships' Companies	36,090	38,569
Expenses of Ships in Commission	1,366,596	1,346,778
Hydrographic Department	258,175	277,079
Shipbuildings and Repairs	3,170,493	4,602,125
Guns, Repairs to Guns, and Torpedoes	583,970	1,210,109
Improvement of Naval Ports	276,339	668,836
Admiralty Yards and Workshops	620,158	661,739
Medical	143,227	141,763
Educational	103,475	101,794
Miscellaneous	213,924	228,343
Total £	8,437,682	10,843,169

United States Navy Estimates, 1907-8.

(Converted at £1 = $4·8665, being par, as adopted by Congress.)

Objects of Expenditure and Appropriation.	Appropriated for year ending June 30, 1907.	Estimates for year ending June 30, 1908.
	£	£
Pay of the Navy	4,165,135	4,858,341
Pay, Miscellaneous	133,566	143,840
Contingent, Navy	13,358	13,357
Bureau of Navigation	389,477	470,627
" Ordnance	1,573,616	3,122,519
" Equipment	1,412,520	1,599,194
" Yards and Docks	210,276	246,000
Public Works under Bureau of Yards and Docks	606,688	2,172,436
Public Works under Secretary of Navy (Naval Academy)	154,114	82,195
Public Works under Bureau of Navigation (Training Stations and War College)	182,800	242,792
Public Works under Bureau of Ordnance	58,255	195,300
Public Works under Bureau of Equipment	2,055	2,055
Public Works under Bureau of Medicine and Surgery	20,548	88,359
Bureau of Medicine and Surgery	83,222	88,544
" Supplies and Accounts	1,209,068	1,500,932
" Construction and Repair	1,660,912	1,667,075
" Steam Engineering	1,170,948	1,206,477
Naval Academy	79,946	88,809
Marine Corps	988,735	1,366,089
Increase of Navy:—		
Construction and Machinery	3,663,993	2,612,538
Armour and Armament	3,112,093	1,849,378
Equipment	—	102,743
Total	£20,891,325	£23,719,600

COMPARATIVE EXPENDITURE, 1896–1906.

From Parliamentary Return, No. 310; *Aug.*, 1906.

I. TOTAL NAVAL EXPENDITURE.

Year.	Great Britain.	Germany.	United States.	France.	Russia.	Italy.
	£	£	£	£	£	£
1896–7	22,271,902	4,312,995	6,180,130	10,687,101	5,953,129	3,973,452
1897–8	20,848,863	5,876,275	6,625,545	10,610,090	5,990,217	4,238,545
1898–99	23,880,876	6,083,874	22,705,901*	11,478,278	6,728,926	4,652,146
1899–00	25,731,220	6,672,788	9,840,912	12,144,020	8,306,500	4,617,034
1900–01	29,998,529	7,648,781	13,385,574	12,511,053	8,662,801	4,903,129
1901–2	30,981,315	9,530,333	16,012,438	13,107,701	9,359,766	4,912,661
1902–3	31,003,977	10,044,031	16,203,916	12,271,948	10,446,392	4,840,000
1903–4	35,709,477	10,401,174	16,824,058	12,538,861	12,349,567	4,840,000
1904–5	36,859,681	10,102,740	20,180,310	12,513,143	11,949,906	5,000,000
1905–6	33,389,600	11,301,370	24,444,948	12,747,963	12,392,684	5,040,000

* Year of war with Spain.

II.—AMOUNT VOTED FOR NEW CONSTRUCTION.

Year.	Great Britain.	Germany.	United States.	France.	Russia.	Italy.
	£	£	£	£	£	£
1896–7	8,369,874	1,252,340	2,295,811	3,400,951	2,072,375	1,310,460
1897–8	8,193,043	2,454,400	2,811,756	3,537,800	2,530,084	1,212,922
1898–9	9,169,697	2,565,600	4,245,255	4,568,676	2,035,735	1,334,922
1899–0	10,270,481	2,832,750	2,078,480	4,713,516	3,519,804	1,156,921
1900–1	9,788,146	3,401,907	4,344,127	4,718,566	3,149,014	1,156,921
1901–2	10,420,256	4,921,036	5,219,357	4,990,987	3,068,139	1,088,921
1902–3	10,436,520	5,039,725	4,701,121	5,389,383	2,904,096	1,254,785
1903–4	11,473,030	4,929,110	5,327,367	5,722,760	3,268,755	1,183,338
1904–5	13,508,176	4,644,862	6,539,990	5,636,732	4,480,188	1,121,753
1905–6	11,291,002	4,968,738	11,374,876	5,739,230	4,576,370	1,714,556

III.—AMOUNT OF NEW CONSTRUCTION.

Year.	Great Britain.	Germany.	United States.	France.	Russia.	Italy.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1896–7	115,260	16,544	7,378	56,556	31,448	16,045
1897–8	65,760	45,244	35,330	15,947	1,200	9,645
1898–9	144,910	4,987	32,615	25,934	29,993	10,318
1899–0	92,620	40,574	1,800	53,906	39,919	10,450
1900–1	137,785	35,840	30,576	39,976	62,862	14,470
1901–2	139,940	62,640	38,574	42,487	52,854	21,080
1902–3	89,465	30,119	37,445	45,956	52,265	650
1903–4	155,225	64,340	84,206	31,142	45,010	12,425
1904–5	85,880	44,072	161,150	45,318	5,138	13,373
1905–6	105,360	33,936	74,000	31,381	20,416	14,555

UNITED STATES BATTLESHIPS.

President Roosevelt's Letter.

In a letter, addressed to the Chairman of the Naval Committee of the House, dated January 11, 1907, President Roosevelt says:

"I thoroughly believe in developing and building an adequate number of submarines; I believe in building torpedo-boat destroyers; there must be a few fast scouts, and, of course, various auxiliary vessels of different kinds. But the strength of the Navy rests primarily upon its battleships, and in building these battleships it is imperatively necessary, from the standpoint alike of efficiency and economy, that they should be the very best of their kind. In my judgment we are not to be excused if we build any battleship inferior to those now being built by other nations. I should be glad if a limitation could be put by international agreement to the size of battleships hereafter to be built. I have found, however, that it will undoubtedly be impracticable to secure any such agreement in the near future. In the first-class navies generally these big battleships have already been built or are now building. We cannot afford to fall behind, and we shall fall behind if we fail to build first-class battleships ourselves. Unless we intend to go on building up the fleet, we should abandon every effort to keep the position which we now hold, whether in the Pacific Ocean or in American waters generally. Our justification for upholding the Monroe Doctrine and for digging the Panama Canal must rest primarily upon our willingness to build and maintain a first-class fighting fleet. Be it remembered, moreover, that such a fleet is by far the most potent guaranty of peace which this nation has or can ever have. . . .

"Much of the information showing the superior value of battleships of large displacement, high speed, and great gun power is of a very technical nature and cannot be briefly stated. This is especially true of certain confidential information concerning the requirements necessary for efficient long-range gun fire, it being understood that in this sense efficiency of gun fire refers exclusively to hitting—that is, to the number of large projectiles that can be landed against an enemy's hull in a given time, and not to the number of all calibres, including six-inch, etc., that can be fired in a given time, which latter is known as the 'volume of fire,' a popular expression having no useful meaning in a military sense.

"But disregarding these arguments, it may still be clearly shown that a certain sum of money appropriated for naval construction can be more advantageously expended for large, high free-board vessels, having many large guns of the same calibre, than for smaller vessels of lower free board, having fewer large guns and numerous small guns. For example:

"Now that a high degree of skill has been developed in naval marksmanship, especially with heavy guns, future battle ranges will be so great (three or four miles) that small guns (six-inch, etc.) will be practically ineffective, especially against large vessels having all of their guns and gun crews in twelve-inch turrets behind heavy armor.

"Therefore the effective offensive power of a battleship may now be measured by the number of heavy (twelve-inch) guns she can fire on either broadside. For the ordinary battleship this effective broadside fire consists of four twelve-inch guns.

"It follows as a matter of course that a large ship having a broadside fire of ten twelve-inch guns could promptly destroy a battleship of the usual type having four twelve-inch guns; and with the advantage of the greater speed of the larger vessel, which would enable her to choose her own distance, she would be more than a match for two of the smaller vessels. . . .

"Thus a squadron of ten small vessels, each having a broadside fire of two heavy guns, or twenty guns in all, must inevitably be defeated by a squadron of two large vessels, each having a broadside fire of ten heavy guns, because the squadron of small vessels would be about two miles long, and therefore cannot concentrate all of its fire effectively upon the two large vessels, whereas the latter, by the great concentration of their heavy guns, all within a length of half a mile, can readily destroy the small vessels nearest to them in the line, and, in the same manner, successively destroy the remainder.

"That is to say, the large vessels can always attain the object sought in all battles, namely, the concentration of a superior force upon an inferior one—upon a part of the enemy's line, while the remaining parts are outside of effective range; and no tactical skill on the part of the squadron of small vessels can counteract this advantage, because the ability to concentrate is inherent in the design of the large vessels.

"The squadron of large vessels must of course be able to choose its own distance and relative position, which it can always do, because of the much greater speed that can be given to vessels of large displacement.

"The same is true, though to a less degree, when we compare vessels having a broadside of four twelve-inch guns (the ordinary battleship) with those having a broadside of ten twelve-inch guns (the battleship proposed).

"From the above it seems evident that, from the point of view of naval efficiency alone, we should build vessels each mounting as many heavy guns as practicable. That is to say, if it be decided that our naval force should be increased by a broadside fire of forty heavy guns, then efficiency demands that we build four high-speed ships, each having a broadside fire of ten twelve-inch guns, rather than a greater number of smaller ships having a broadside fire of four twelve-inch guns each.

"For the reasons given above, a squadron of vessels each having a broadside fire of twelve or more heavy guns would be more powerful than a squadron having the same number of guns mounted on vessels having a broadside of ten guns each; and the sole reason for not advocating more than ten guns on a broadside is that such vessels are not at present necessary, as none of the vessels of our possible enemies have a greater offensive force. The principle, however, holds good that, given the same number of twelve-inch guns in each of two squadrons, the squadron having the most guns on each of its vessels (and consequently the greatest flexibility in manœuvring and concentration of fire) will be the most powerful, assuming skill in marksmanship, tactics, etc., to be equal.

"While the question of economy should not be allowed to diminish the naval force (the number of effective guns) required for national defence, it may nevertheless be stated incidentally that we can increase our naval force by a broadside fire of, say, forty twelve-inch guns at considerably less cost by building ships having a broadside fire of ten heavy guns each than by building a greater number of smaller ships each having a less broadside fire. . . .

"For the sum that it would cost to maintain ten small ships we could maintain a squadron of four large ones that would be greatly superior in tactical qualities, total effective hitting capacity, ability to fight the guns in a heavy sea, speed, protection, and the inherent ability to concentrate its gun fire (and which, therefore, could readily defeat the ten small vessels), and make a yearly saving of over four millions in maintenance, not to mention a saving of about thirty millions, or over forty per cent., in the original cost, and we would require fewer men and officers to handle the more efficient fleet.

"In addition to the above-indicated tactical qualities of large vessels, they also possess the great advantage of carrying their guns at a considerably greater height above the water, thus enabling them to fight them effectively when some of the guns of vessels of lower free board could not even have their ports open. For example, the Michigan and South Carolina are defective in this respect, having their forward turret guns at a height of only twenty-four feet above the water, while those of the British Dreadnought are at a height of about thirty-five feet.

"All first-class foreign maritime nations, including, for example, England, Russia, and Japan, are now laying down or preparing to lay down high-speed battleships of from 18,000 to 20,000 tons displacement, with main batteries composed exclusively of heavy guns.

"It is therefore manifest that an adherence on the part of this country to the smaller types of low free-board ships with mixed batteries and few heavy guns would manifestly place us at a great disadvantage, because we would be paying more per twelve-inch gun of broadside fire than our rivals, and these guns would be less effective in battle.

"I enclose a copy of a discussion on this subject by Lieutenant-Commander William S. Sims, of the U.S. Navy, an officer whose signal service to our Navy in the development of its marksmanship cannot be overstated."

THE TACTICAL QUALITIES OF THE DREADNOUGHT TYPE OF BATTLESHIP.

(Portion of Official Report.)

By LIEUTENANT-COMMANDER W. S. SIMS,
United States Navy.

In the first place, I beg to express the opinion that if, when Captain Mahan wrote his article, he had been in possession of certain important information that has since become available, his conclusions would have been considerably modified; and while I would not presume to oppose his views as to the conclusions to be drawn from the facts—as he has assumed them, and as he understands them—still I feel I am justified in restating these facts as I understand them, in the light of the new evidence above referred to, and basing thereon my conclusions. Captain Mahan's principal conclusions may be summarised briefly as follow:—

(1) That in designing battleships of a certain displacement we are never justified in increasing the speed within reasonable limits at the expense of the equivalent weight in gun-power. (2) That we are not justified in substituting heavy turret guns, such as 12-in., for the equivalent weight of the usual intermediate guns—6-in., etc.; in other words, that the "all-big-gun" ship is a mistake. (3) That considering the necessary limits of expenditure and the requirements of a navy with wide naval responsibility, we should not materially increase the size of the ships now being designed.

These conclusions are admittedly derived from or supported by an analysis of the available information concerning the battle of the Sea of Japan. In the same number of the *Naval Institute Journal* in which Captain Mahan's article appears there is published a very important paper giving a history of this battle that is founded on very precise notes. The author of this paper, Lieutenant R. D. White, U.S.N., a distinguished gunnery officer and naval constructor, having no station in battle, was selected to observe and record the events of the battle. As my principal reasons for dissenting from Captain Mahan's conclusions are based upon the assumption that the facts in this account are correct, I will take the steps necessary to mention an interesting incident that tends to show the correctness of Mr. White's chart and that also gives a practical illustration of an important feature of tactics in relation to gun-fire—a feature that gunnery officers had already recognised in discussing the theory to which it will be necessary to refer later.

Analyses of this battle-chart were made and curves drawn to illustrate at all stages of the action "the rate of change of range." "After marking the times of these curves, and plotting the positions of the two fleets at those times, we found, on comparing them, that the Russian ships were driven out of the line of battle or sunk only when the rate of change of range was small, and that when this rate was large there was little or no evidence of damage being done by gun-fire." This coincidence of time, "rate of change of range," and destruction of ships is strong evidence that Lieutenant White's chart is correct, otherwise there would be no coincidence. Further corroborative evidence is given later.

As this question of the rate of change of range undoubtedly had a direct bearing upon Admiral Togo's tactics, it should be explained that experiments have shown that it is exceedingly difficult to hit an enemy at long range when the range is changing rapidly. This is, of course, not true at short range, but at long ranges the half-danger spaces—those at which the gun-sights must be set in order to hit—are so small, say, 50 yards. The bearing of these facts on naval tactics is very important, since it means that, generally speaking, you cannot make many hits at long range while you are manœuvring. Conversely, you will not receive many hits during such a time, because, when at short ranges, the most dangerous position in which a ship can place itself is end on to the enemy. It is usually assumed that this is equally true at all ranges; but this is not the case provided the rate of change in fire is rapid. A reference to the chart will show that upon three occasions during the action Admiral Togo did not hesitate thus to expose his ships, and that at none of these times was any material damage done.

Captain Mahan has assumed that shortly after the Russian and Japanese fleets sighted each other the Japanese changed course from south-west to east, while the Russians were steering about north-east, and the Japanese speed was slower than that of the Russian. Under these conditions—that is, with the course assumed—the rate of change of range would have been very rapid, and therefore very little hitting could have been done. As a matter of fact, the Russians were steering about north-north-east, and the Japanese, after turning from south-west to east, took a course nearly parallel to them on their port bow. Thus the rate of change of range was rendered small, and the Japanese fire was concentrated on the head of the Russian column, and was so effective that the Suvaroff was driven out of the line, and the Oslabia sunk by the time that the Russians had advanced five miles. The above shows that the nature of the action was rather different from that which Captain Mahan's information led him to suppose. It is therefore unnecessary to follow out the details of the reasoning by which he assumes that Admiral Togo was influenced in taking a position (across the head of the enemy's column) which he did not take; for it is important to point out that the Japanese admiral's plan of action was what we would have supposed it to be, in the light of our present knowledge of the conditions necessary to the mean effective hitting at long ranges. In the first place, it may be confidently assumed that Togo was in possession of the following important facts:—(1) That his fleet's speed was considerably greater than that of the enemy, the bottoms of his ships being clean, and theirs foul, and there being slower ships in the Russian fleet than in his. (2) That his marksmanship was superior to that of the Russians. (3) That the Russian gunnery training had for years been carried out with the object of bringing the enemy to close quarters, and that, even assuming that they had profited by their experience in the actions off Port Arthur, the Baltic Fleet could not have had adequate training in long-range fire. (4) That in order to render effective the tactics indicated above the Russian ships were heavily armed, and their crews trained for rapidity of fire. (5) That effective hitting at long range can be done only when the rate of change of range is comparatively small.

The above being true, it is clear that Admiral Togo must have gone into action with two principal objects clearly defined in his mind—namely (1) Fighting at the maximum range at which actual experience of battle practice had shown him that he could do effective hitting—namely, at about 6000 yards—and at which he knew that the Russian fire would not be dangerous. (2) So to manœuvre as to maintain the least practical rate of change of range as frequently as possible upon the head of the enemy's column. If he had not been able to accomplish these two objects he might still have won the battle, because the Russians were so very inferior in many other respects; but he certainly would have suffered more. For example, if the Russians had been able by superior speed to run in to 1800 yards—the battle-range of their choice—they would have made a large percentage of hits, and these hits would have been very effective, especially from their modern ships of French design—the Suvaroff, Alexander III., Borodino, and Orel. A glance at Lieutenant White's chart will show, however, that the Japanese admiral had no difficulty, barring thick weather, in repeatedly choosing his own position, distance, and bearings with reference to the head of the enemy's fleet, and the battle therefore resolved itself into a competition between the fire-control officers of the two fleets.

Let us now consider the manifest object of the Russian admiral's strategy and tactics with a view of determining why he was unable to succeed. In the first place, the Russian battleships were so overloaded with stores and coal that the upper edges of their heavy armour plates were well below the waterline, and, therefore, in so far as the hull protection was concerned, they were armoured cruisers and not battleships. Also, that the compartments, cabins, passages, &c., were so filled with coal and stores that the men's water-closets and urinals had been blocked since leaving Leghorn, and the decks were in consequence in an indescribable condition. We may therefore safely assume that the Russian admiral approached the Tsushima Straits with two objects foremost in his mind. The first, and most important, was to elude the Japanese and take shelter in Vladivostock until he could land his stores, dock, and refit his ships. Second, if forced to fight, to do so at the shortest possible range, where most of his shots would count. He was defeated in both of these objects solely by the superior speed of the Japanese, assuming, of course, that he could not pass through the Straits without being detected. Once he was sighted by the Japanese (which was inevitable), their superior speed—which, as shown later, was 6 to 7 knots greater than that of the Russians—rendered impossible his escape without fighting, and, as previously shown, this superiority of speed enabled the Japanese repeatedly to concentrate upon his leading ships, and thus destroy or disable them one at a time, or force them to accept defeat in the worst form—namely, by abandoning their attempt to reach Vladivostock, thus surrendering the command of the sea without inflicting any damage upon the enemy.

It is, of course, understood that, assuming all other qualities to be equal, a relatively small superiority of speed cannot alone determine the victory by gun-fire under the usual "game-board" conditions—that is, where sea room is unlimited, where it is always daylight, and where thick weather does not act as an occasional screen; where the slow fleet is not embarrassed by having to get anywhere in particular; where there is no convoy or fleet to lose in case of retreat, &c. In this case the slow fleet can prevent the fast one from taking up a position of continuous advantage by simply keeping ahead of the enemy's column abeam, thus training on the arc of a circle of a sufficiently small radius to counteract the superiority of speed of the fast fleet. The sole tactical ability of the slow fleet is a negative one as regards gun-fire· it can never attain the advantage of position, assuming equal skill on both sides. Its tactical ability exists only in the open sea, and even then the faster fleet has the great advantage of being able to first refuse or accept battle, to choose its own range, to control the rate of change of range, and to control compass bearing, thus taking advantage of the weather conditions that control its own gun-fire.

It follows from the above that the slow fleet must always fight at a disadvantage, even in the open sea, and that when restricted in its movements by the neighbourhood of land or shoal water, by the necessity of protecting its engine auxiliaries, by the necessity of reaching a definite point, or by the necessity of leaving a port in the face of a blockading enemy, it must inevitably be defeated, even by a faster fleet of equal power, and can be defeated by a faster fleet of less power. From the above it seems clear that in the light of our present knowledge of the fundamental principles of long range gun-power, a superiority of speed that will enable a fleet frequently to concentrate its fire on an enemy who is not entirely unrestricted in his movements, as above explained, is more important than the additional gain corresponding to the weight in boilers and engines required to give the superiority in speed.

Captain Mahan estimated that the Russian fleet maintained on 27th May a fleet speed of at least 12 knots, while the Japanese seemed not to have used more than 15 knots. Lieutenant White's information states that the Russian fleet speed was 9 knots, and the Russians estimated the Japanese speed at 16 knots. As Lieutenant White's chart is a chart plotted to scale from the precise data taken by his informant, and not simply a diagram to illustrate his text, it follows that if we measure the distance steamed by the two fleets from 1.55 p.m. to 6.25 p.m. (four to five hours), and divide this distance by the elapsed time, the results will be complete speeds, though the calculation will be rough, as the scale of the chart is small. This calculation shows that during the four to five hours the Russians steamed forty miles, while the Japanese steamed sixty-eight. This gives the average speed of the former as a little less than 9 knots, and that of the latter as a little more than 15 knots. It should be noted, however, that the Japanese speed alternated 0 to 16 knots between 3.40 and 4.15; therefore their average speed was probably considerably more than 15 knots. The Japanese superiority in speed was therefore more than six miles an hour, an advantage so enormous that no conceivable strategical or tactical skill and no possible augmentation of gun-fire (without increasing the displacement) on the part of the Russians could have prevented their defeat, even supposing a rudimentary knowledge of strategy and tactics on the part of the Japanese admiral, and assuming, of course, that the

Russian fleet was constrained to force its way sooner or later through the Straits. If the speeds of the Japanese and Russian fleets had been reversed, Admiral Togo could possibly have prevented the Russians, first, escaping to Vladivostock, or, second, bringing the Japanese to battle at short range if they had so desired. Furthermore, Admiral Togo's comparatively easy strategy would have been so modified by a reversal of the speed conditions that he would have been obliged to await the Russians at Vladivostock, out of range of the outer ports, in a region of frequent and dense fogs, and do what damage he could as they passed in. It may also be pointed out that shortly after 4.15 p.m. the Japanese lost sight of the Russians, due to thick weather, and steamed seven or eight miles to the southward in search of them, and when they turned to the northward in pursuit they were about ten miles astern. Therefore if the Russians had had even a quarter of a knot superiority in speed, they would have arrived at Vladivostock a couple of hours ahead of their pursuers.

It is true that the speed of a ship may be reduced by damage to the motive power of one of its units; but this has very rarely happened, because engines, boilers, &c., are below the water-line, and well protected by the best armour. Captain Mahan lays great stress upon the alleged difficulty of the loss of funnels or smoke-pipes, showing that the resulting decrease of speed would be so great that the loss of a modern funnel would be like the loss of a former-day mast. This appears to me to be a great exaggeration. As I understand this matter, the principal reason for building a tall funnel is for increasing the natural draught, and thus render steaming more economical in time of peace. Tall funnels have always been a mistake from a military point of view, because when the vessel having them goes into battle, and forced draught is put on to develop her maximum speed, the tall chimney adds very little to the draught by reason of its height. We may regard their being shot away or riddled with holes with comparative equanimity—provided they do not fall on deck and disable guns, since in every case the draught will not be materially decreased, as the high funnel corresponds to a pressure of about ½ in. of water, whereas blowers will create a pressure corresponding to about 2 in. of water.

It may be well to notice, moreover, that the requirements of fire-control necessitate much shorter funnels, because gun-fire can be controlled efficiently only from elevated platforms on the masts (about 100 ft. from the water); and as funnels cannot be made high enough to carry the smoke over these platforms, they must be so low that the smoke will not reach them.

Concerning the advisability of building " all-big-gun " ships—that is, discarding all smaller guns, except torpedo defence guns—and designing the ships to carry the maximum number of heavy turret guns (these alone to be used in battle), I think it can be clearly shown that Captain Mahan is in error in concluding that it would add more to our naval strength to spend the same amount of money that the big ships would cost for smaller and slower ships carrying the usual intermediate guns—6-in., &c.—and that it is only a question of speed. This error is probably due to the fact that much important information concerning the new methods of gun-fire was not considered by the author in preparing his article.

In order that this question of gun-fire may be clearly understood, it will be necessary to mention the fundamental principles of fire-control. In order to hit at long ranges you must have the sight-bar range within small limits—that is, one half the danger space. No existing range-finder will measure such long distances within these limits. With the ammunition carried by ships in service (that is, ammunition that is not new) this sight-bar range usually differs for each index of power, even for guns of the same calibre, and the sight-bar range for one calibre is rarely the same as that for any other calibre. Therefore there must be a separate fire-control for each calibre on board, which greatly increases complication and difficulty of control when there is more than one calibre. Since the range-finder can never be relied upon, it follows from the above that the sole means of bringing the sights on to an enemy, and keeping them there, is by observing the splash of projectiles from aloft by the vertical method. If a ship has guns all about one calibre, fire-control is comparatively easy, because each splash is necessarily made by that calibre, and the fire of the ship is controlled by one fire-control officer (directing one fire-control party). When the distance is over 5000 yards you cannot follow the projectiles throughout their flight and identify their splashes, unless the projectiles of the different calibres differ greatly in diameter—as 12-in. and 6-in.—and consequently make splashes that are markedly different in size and appearance.

Therefore we have to decide what the calibre for each class of ships should be, a decision which should present no special difficulty provided it be first determined how and where to defeat the enemy—whether by the destruction of their ships by sinking them, or disabling their guns, or by the destruction and demoralisation of their *personnel*. In this connection the following facts should first be clearly understood—namely, turrets are now for the first time being designed that are practically invulnerable to all except heavy projectiles. Instead of having sighting-hoods on the turret roof, where sight-pointers and officers are exposed to disablement (as frequently happened in Russian ships), there will be prismatic sights projecting laterally from the gun-trunnions, through small holes in the side walls of the turret; and the gun ports will be protected by 8-in. armour-plates, so arranged that no fragments of shells can enter the turrets. On the proposed "all-big-gun" ships the heavy armoured belt will be about 8-in. thick above the water-line, extending from end to end; the conning-tower, barbettes, &c., will be of heavy armour, there being no intermediate battery (which could not be protected by heavy armour on account of its extent). It follows that in battle all of the gunnery *personnel*, except the small single-fire control party aloft, will be behind heavy armour, and that therefore neither the ship nor her *personnel* can be materially injured by small calibre guns.

Considering, therefore, that our object in designing a battleship is that she may be able to meet those of our possible enemies on at least equal terms, it seems evident that it would be extremely unwise to equip our new ships with a large number of small guns that are incapable of inflicting material damage upon "all-big-gun" one-calibre ships of our enemies, or upon the *personnel* manning their ships.

It is necessary to describe the method of controlling 6-in. guns in order to show that Captain Mahan's apparent impression as to their efficiency in battle is probably very largely in error, as shown by an analysis of the results of battle practices and of the rapidity of hitting of these guns in the battle of the Sea of Japan. We have sufficiently complete information concerning these practices, and the indisputable lessons taught by them; and our development was based thereon, and has proved successful. Briefly, these lessons are as follow:—If the pointer aims through the heated powder gas from another gun, as soon as he can make out the target, he will almost always miss, because the heated gas refracts the line of sight. He must therefore wait until he has clear air to aim through. The loss of time due to this cause is termed the "interference" of one gun with another's fire. In attempting to make the greatest possible number of 12-in. and 6-in. hits on a run after a certain length of time (the measure of the efficiency in fire), it was found that when the 6-in. guns were allowed to fire at will the interference caused by the frequent puffs of gas from them—about one puff every two seconds—was such as to diminish so seriously the rapidity of hitting of the 12-in. guns, especially those of the after turret, as to render it entirely inadmissible that these guns should fire at will, simply because the ship could do an enemy more damage by discontinuing their independent fire entirely, and using the 12-in. guns alone. It was therefore determined to try to decrease their interference by firing them all at the same time—that is, by salvoes. This was found to be unexpectedly successful, as by this method more 6-in. hits per gun per minute were made than when these guns were fired independently. Salvo firing is possible only with guns that are capable of continuous aim—that is, intermediate guns of 6-in. in calibre or less. It is, of course, not possible with 8-in. guns, and it may or may not succeed with 7-in. guns, depending upon the facility with which the pointers can maintain a continuous aim in elevation. When 6-in. guns are fired singly their average rapidity of fire is about seven rounds per minute. When these guns fire salvoes their rapidity of fire does not average more than four rounds per minute, the best so far attained being five rounds per minute. When firing at short ranges the percentage of hits made by guns of different calibres varies with the calibre; thus the larger the gun the greater the percentage of hits. When firing at long ranges the same law holds, except that the larger calibres have then a much greater advantage, because their angle of fire is much less than that of small guns, and consequently their danger space is much greater. For example, at 6000 yards a 12-in. gun, having an initial velocity of 2400 ft. per second, has an angle of fall of 4·75 degrees, while that of a 6-in. gun having the same velocity is 8·50 degrees, and the respective danger spaces for a target 30 ft. high are respectively 120 and 64 yards.

This illustrates how much more difficult it is to hit with a 6-in. than with a 12-in. gun, which makes it clear, I believe, that Captain Mahan is greatly in error in saying that if we determine the number of shots fired by each calibre, we may assume "as probable a proportionate number of hits." As a matter of fact, Captain Mahan has drawn his conclusions from the "volume of fire" of the different calibres, instead of from their volume of hitting, or rapidity of hitting, which is our present standard of efficiency for all kinds of gun-fire. He has also assumed that the Japanese rapidity of 6-in. fire was about twelve times as great as that of the 12-in. fire, but, as a matter of fact, it was probably not much more than twice as great. We have, of course, no actual figures, but as we know that our 12-in. guns can fire two shots a minute (and with improved loading gear we expect to fire three shots per minute), and that 6-in. salvo firing is at the rate of four shots per minute, and, as we also know, since 1901 the Japanese have used the same methods of training, we may safely assume that the relation between their 6-in. and 12-in. rapidity of fire is about the same as ours, though both calibres may be actually less or more rapid. Lieutenant White estimates that the Japanese fired 1275 heavy shell (12-in.), and made 250 hits, or 19·6 per cent., which was good shooting considering the long ranges and the unfavourable weather. As for the 90 odd secondary guns (Captain Mahan's estimate), if we assume that, on an average, each fired 2½ times as many shots as each 12-in. gun, the total number of shots was 86,175 (2·5 × 75 × 90). If they had made a "proportionate number of hits," or 19·6 per cent., they would have secured 3307 hits, or about thirteen times as many as the 12-in. hits, which we know they did not make.

Unfortunately, we cannot obtain the exact figures, though we can make an estimate that will be close enough to show the comparative hitting capacity of these guns. They fired 50 lb. of small projectiles for every pound that hit, whereas they fired only 5 lb. of 12-in. metal for every pound that hit, which accords with the law that we have deduced from our target practices—namely, that the smaller the gun the more projectiles you must waste to make a hit. But as the Japanese battleships and armoured cruisers carried these guns, they were, of course, justified in firing them as best they could, without diminishing the rapidity of the 12-in. guns. They did not, however, fire off all their small guns—those less than 6 in.—because to do so would have caused too much "interference" with more important guns, though the hail of small projectiles, that is so popular in newspaper accounts, would have been very effective if they had hit.

If the Japanese vessels had been designed in accordance with the principles of modern gun-fire—had been "all-big-gun" ships—their fleet would have developed a greater rapidity of hitting with heavy guns (875 hits) than it actually did develop with 12-in., 8-in., and 6-in. guns (700 hits), and this for the simple reason that at long ranges the hitting capacity of their heavy guns was 19·6 per cent., while that of the smaller guns was only 2·1 per cent. Moreover, as a matter of fact, a fleet having but one calibre of heavy guns on each vessel would have been able to make still more hits in the given time, because their fire-control officers would not have suffered from the interference caused by the more numerous smaller guns. Thus we see that at modern battle-ranges an "all-big-gun" fleet will actually deliver a greater volume of hitting (a greater number of hits)—twice the weight of metal hits, and twice the weight of bursting charges—than a fleet of mixed-battery ships of the same nominal power. As to the comparative moral effect of the explosion of 12-in. and 6-in. shells, it seems to me that, when we compare the difference in the weight of the bursting charges (that of the 12-in. 38 lb., while the 6-in. is only 4 lb.) and the difference in the strength of the walls of the shell, there can be no doubt that the moral effect of the former is very much greater than that of the latter.

Fig. 2.

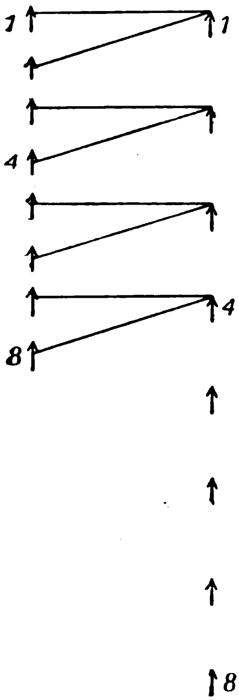


Fig. 3.

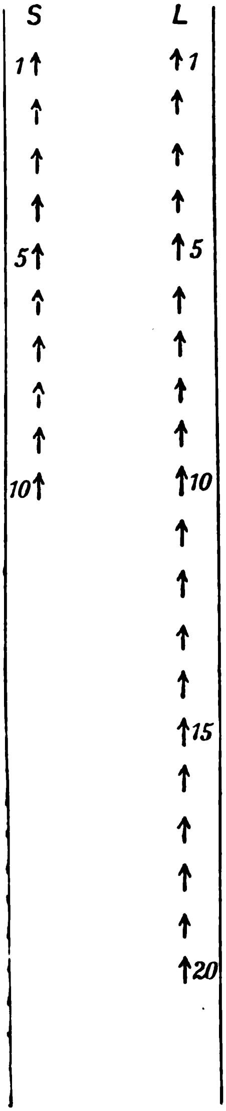
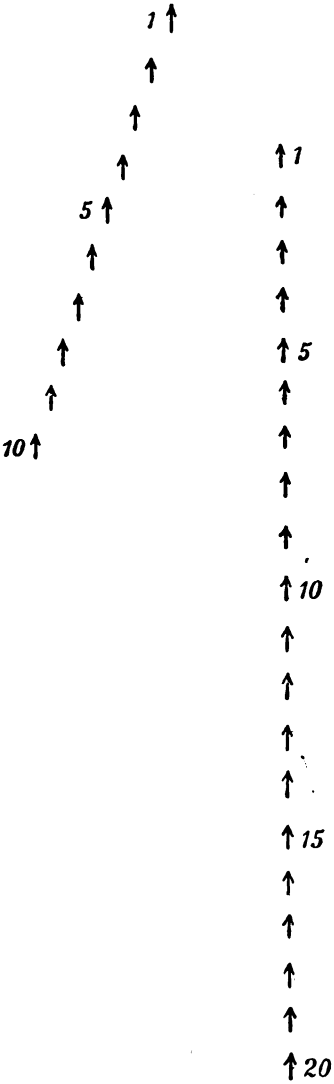


Fig. 4.



But it may be asked how can we account for the fact that until recently practically all naval officers have favoured ships with two or more calibres of main-battery guns. The explanation is afforded by a statement made in the annual report of the Chief of the Bureau of Ordnance about 1902, to the effect that it was not considered advisable to increase the number of heavy guns on battleships, because the greater the calibre of the guns the less their hitting capacity, due to the weight to be handled in aiming, &c. While this may have been true to a certain extent during the time that we paid practically no intelligent attention to shooting, it ceased to be true as soon as the present competitive system of training developed the real hitting capacity of these guns, thus reversing this supposed law, and showing that the true law was, as should have been recognised, in perfect accordance with the ballistic properties of the various calibres.

Referring now to a point previously indicated, but not explained, I beg to invite special attention to the tactical advantage that we shall gain by having battleships of large displacement, an advantage which appears to me so great as to entirely outweigh all the alleged advantages of numbers mentioned by Captain Mahan. This may be best illustrated by contrasting the tactical qualities of two fleets, one of large vessels and one of small. Before doing so, however, it may be well to state my understanding of the principal tactical qualities which are desirable in the fleet. These are, first, the compactness of the battle formation; second, the flexibility of the fleet as a unit—that is, its ability to change its formation with the least possible time and space with safety to its units. For example, suppose two fleets of eight vessels composed of ships that are alike in all respects, and suppose their *personnels* to be equal, with the exception of the commanders-in-chief—whose difference in skill and ability is such that one fleet has been so drilled as to be able to manœuvre with precision and safety, while maintaining one-half the distance between its units that the other fleet requires. This is putting the extreme case, but it shows first that the short fleet, being about half the length of the other one, can complete certain important manœuvres in about one-half the time and one-half the space required for similar manœuvres of the long fleet. (2) That when ranging alongside each other, as shown in Fig. 2, defeat of the long fleet is inevitable, since rapidity of hitting of the individual units is assumed to be equal, and each of the four leading ships of the long fleet receives about twice as many hits as she can return, though the eighth ship of the short fleet would suffer a preponderance of the gun-fire from the fifth or sixth vessel of the long fleet, the seventh and eighth being too far astern to do much damage, as would also be the case if the long fleet had several small vessels astern of this. This is because of the principle here illustrated—that the constant effort of the competent flag officers is to reduce the distance between the units of their fleets to the minimum that can be maintained with safety under battle conditions —that is, while steaming at full speed, without the aid of sextants and other appliances that should be used only for preliminary drills.

Doubtless some flag officers by constant competitive exercises in manœuvring may succeed in attaining an interval between ships that is less by 15 per cent. or 20 per cent. than that attained by others; but manifestly there is hardly any possibility of much greater improvement in this respect, because the minimum practical interval between ships depends upon their lengths and manœuvring qualities. For example, the normal interval is 300 metres from centre to centre; while larger ships, of, say, 400 ft. long, require about 400 yards, and those between 450 ft. and 500 ft. in length require about 450 yards. If we accept Captain Mahan's advice and build comparatively small, low-speed battleships, while our possible enemies build large, swift, or big-gun ships, it seems clear that we shall sacrifice the enormous advantages of fleet compactness and flexibility, the superior effect of heavy gun-fire, and the ability to concentrate our fire—the loss of these advantages to be fully realised twenty-five years hence, when our enemies have fleets of big ships, while we still have those of our present type.

In order clearly to illustrate the above, I will assume that a fleet of ten 20-knot battleships, of about 20,000 tons displacement, each having a main battery of five 12-in. double-gun turrets, or a broadside fire of eight 12-in. guns disposed as in the Dreadnought type—that is, one turret forward, one on each beam, well forward, and two aft on the centre line. Assume the cost of these ships to be ten million dollars each, or 100 millions for the fleet, and assume that the same sum of money will build twenty battleships (though the number would in reality be considerably less) of the smaller type of, say, 13,000 tons and 16 knots speed, each ship armed with two 12-in. double-gun turrets or a broadside of four 12-in. guns, and as many of the smaller guns recommended by Captain Mahan as can be mounted upon this displacement. It is further assumed that as all the gun crews of the fleet are behind heavy armour in the 12-in. turrets of new design, neither the crew nor guns can be materially injured by the intermediate guns of the fleet of small vessels; whereas, on the contrary, the majority of the men composing the gun crews of the small vessels (all but about ninety for the two 12-in. turrets and their ammunition supply) are behind the armour of the intermediate guns, necessarily light on account of its great extent;

and these guns and their crews must be disabled or destroyed early in the action. It is, therefore, evidently well within the truth to assume that the gun-fire of each large vessel will be more than twice as effective as that of each small one.

If the length of a large ship is 500 ft., and the small one 400 ft., and the interval between centres is respectively 450 and 400 yards, it follows that when in column the long fleet of small vessels is 3·9 miles, while the short fleet of large vessels is 2·1 miles. That is to say, the long fleet has a broadside fire of less than twenty-one big guns for each mile of length, while the short fleet has thirty-eight guns per mile, with concentration of gun-fire that is inherent in the design of the large vessels, and which no conceivable technical skill on the part of the small ones could off-set.

The technical advantage of this concentration of gun-fire is shown graphically in Fig. 3,* which shows "S" in a position of disadvantage; it is apparent that the first nine vessels of the "L" fleet may be destroyed by the first nine of the "S" fleet, since the latter have more than twice the gun-power of the former, while No. 10 S can sustain the fire of both 10 and 11 L, but not that of 12, 13, and 14 L also. Assuming, however, that the fourteenth vessel of the "L" fleet is the last one whose fire would be effective against 10 S, the rear vessels of the "S" fleet might, by reason of having more than twice the individual gun-fire of their individual opponents, protect themselves by dividing the fire of 10 S between 13 and 14 L, 9 S between 11 and 12 L, 8 S between 9 and 10 L, and 7 S between 7 and 8 L, thus leaving the first six vessels of "L" to be destroyed by twice their gun power from the first six vessels of "S," an advantage that is possible only with big ships; and this advantage is of great importance, because when the "S" fleet is taken at a disadvantage it enables each of its vessels to hold her own against at least two of the enemy.

Observe that even when the "L" fleet is in the advantageous position shown in Fig. 3, no increase in the number of vessels of the "L" fleet can possibly prevent the successive destruction of the leading vessels, since the vessels behind No. 14 are practically out of action. Observe, also, that if for any cause the "L" fleet should be restricted in its manœuvres, the "S" fleet, instead of exposing its rear vessels to concentrated fire, as in Fig. 3, would take advantage of its superior speed, and assume the position shown in Fig. 4,* thus concentrating upon the leading vessels of the "L" fleet its entire gun-fire at a greater or less average range. This would be possible if the positions of the fleets were reversed—that is to say, the concentration of the "S" fleet upon the leading vessels of the

---

* Figs. not given.

"L" fleet, Fig. 4, is very much more intense than would be the concentration of "L" upon the leading vessels of "S."

It would, therefore, appear that from the tactical point of view alone the advantages of large vessels are such that they afford greatly increased offensive power when in a position of advantage, and greatly increased defensive power when in a position of disadvantage. It should also be noted that if through an accident to the motive-power of the large vessel the fleet speed of "S" were reduced to that of the long fleet, the "S" fleet would still be the superior tactically, because it is more compact (is shorter, and has less units), and can therefore manœuvre with greater ease, and frequently in much less time; an advantage that is in some cases analogous to superior speed.

For example, the time necessary to indicate a signal to the twenty vessels of the "L" fleet, and before it is understood, and for this fleet to complete a change of course in column, so as to make a simultaneous movement, would be at least twice as long as that required for the ten vessels of the "S" fleet. It follows, of course, from the above that as soon as we build any fast vessels of the large displacement above indicated, and put them in the line of battle with 16-knot ships, we strengthen the fleet much more than if we had as many 16-knot ships as could be built for the cost of the big ships. For though we cannot at once utilise the superior speed of the big ships, we have, nevertheless, increased the compactness of our ships by diminishing the number of units, and therefore, for the reasons given above, have rendered it a superior tactical unit, which means that, with equal skill, it would out-manœuvre a fleet of the same cost composed of small vessels throughout.

It should be noted also that if we place two only of these battle-ships at the head of a column of small vessels, each having one-half of the broadside fire of the former, we not only render the fleet more flexible, being shorter by more than 2000 ft., but we strengthen our fleet at the weakest point by concentrating within a distance of 1800 ft. a broadside fire equivalent to that of four vessels occupying a space of 4000 ft. The above advantages are evidently so great that the alleged value of homogeneity of units is not worth considering.

Concerning the alleged strategic value of numbers, and assuming that Captain Mahan's statement that "a nation with wide naval responsibilities must have numbers in proportion" means that we had better spend our available appropriations in building small vessels rather than large ones, in order to facilitate dispersing them all over the world, I beg to say that in my opinion the above analysis shows very conclusively that a fleet of the large vessels is greatly superior in fighting value to a fleet of small ones, no matter into how many equal squadrons of, say, four or more vessels we subdivide them. For example, for 280,000,000 dols. we could build 28 of the Dreadnought class, 40 "Connecticuts," or four squadrons of seven and ten vessels respectively. The former squadron would be 1·4 miles long, with a broadside fire of forty 12-in. guns per mile, and the latter 2·1 miles long, with a broadside fire of twenty 12-in. and twenty 8-in., neglecting the smaller guns as not effective against any armour of the Dreadnought class. The above assumes that a nation of even the widest naval responsibility would ever deem it possible to disperse their naval units throughout the world, even in time of peace, thus diminishing individual efficiency, unity of purpose and action, and the indispensable ability to manœuvre large fleets at battle speed. Rojhdestvensky's fleet had been manœuvred but once as a fleet before the battle of the Sea of Japan.

I had always supposed that the subdivision, in time of peace, of a nation's fighting units into numerous independent squadrons was due more to personal reasons than to a consideration of the principles of naval training and strategy, as illustrated by the rapid concentration which takes place when war is imminent. I understand that where the command of the sea is involved, a nation is not debarred from going to war by the state of distribution of the rival nation's battleships, but by the knowledge that they have a certain number, that they possess certain material fighting qualities, and that they have been continuously trained to a high degree of individual and fleet efficiency by concentration in one or more large fleets.

If it be claimed that it would be better to reduce the speed of the large vessels to 16 knots, and put the weight saved into guns, it may be replied that heavy turret guns cannot be mounted (so as to increase the hitting capacity of the vessel) without very considerably increasing the size of ship, because the number of heavy turrets that can be placed to advantage is governed largely by the length of the ship, which increases slightly with the displacement. This point is fully discussed in a recent article in a German publication. I do not remember the displacements used by the author to illustrate the principle, but, supposing the ones quoted below to be correct, he shows that if it requires a displacement of 20,000 tons to obtain a broadside fire of, say, eight 12-in. turret guns, you could not advantageously mount any additional turrets on 21,000 tons or 22,000 tons, but would have to go to 25,000 tons or 26,000 tons to obtain the necessary space. Conversely, if you design a 20,000-ton battleship for 16 knots instead of 20 knots, you cannot utilise the weight saved to increase the gun power by adding 12-in. turrets, as you can by adding a number of intermediate guns. It is now hardly necessary to state that adding superimposed turrets, by which the number of guns can be doubled (for a given weight), does not materially increase the hitting capacity of the ship as a whole, because of the interference caused by having four guns in one two-storey turret while it decreases her defensive power by adding to the vertical height of her vital target.

Captain Mahan characterises the sudden inclination of all navies to increase the size of the new battleships from about 15,000 tons to about 20,000 tons as "wilful premature antiquating of good vessels," a "growing and wanton evil." It seems to me that the mere fact of there being a common demand for such vessels is conclusive evidence that there must be a common cause that is believed to justify the demand. This common cause is undoubtedly the common belief that the same amount of money expended for large war vessels will add more to a nation's naval power than the same amount expended on smaller vessels.

It should never be forgotten that the credit for the inception of the epoch-making principles of the new methods belongs exclusively to Rear-Admiral Percy Scott, Director of Target Practice in the British Navy, who has, I believe, done more to improve naval marksmanship than all the naval officers who have given their attention to this matter since the first introduction of rifled cannon on men-of-war.

From the point of view of naval efficiency, we should have nothing to fear from even a still further increase in the size of our battleships. For example, reverting to the supposed fleet of ten 20-knot ships, the "S" fleet above described, there can be no doubt that the same sum—100 million dols.—expended for a less number of still larger battleships would produce a superior fighting fleet, For the same sum we could doubtless build eight ships, each having a broadside fire of ten 12-in. guns instead of eight, with 1 knot more speed. Such a fleet would be 1·7 miles long instead of 2·1 miles, with the concentration of forty-eight heavy guns per mile to oppose to the twenty-one per mile of the long "L" fleet (3·9 miles) of small vessels, not to mention the increased superiority of its manœuvring qualities, and the superiority of its protection against gun-fire and torpedoes. One of the great advantages with a large vessel is that the under-water hull may be so designed that the ship cannot be materially damaged by one torpedo.

A brief explanation is now required as to why Prussian and American naval officers are practically a unit in advocating the "all-big-gun" one-calibre ship, while some other navies, discarding the small guns—6-in., &c.—still retain in new designs large turret-guns of two calibres, as 12-in. and 8-in. and 11-in. and 9·2-in., &c.;

the larger turrets being in the bow and the stern, and the smaller ones on the sides. The reason is, I believe, that they do not yet understand the great difficulty of controlling the fire of guns that approach each other in calibre. From the facts and arguments presented I derive the following main conclusions, formed upon what I believe to be fundamental theoretical principles of gun-fire and tactics:—(1) That in consideration of the fact that the ultimate object of the fleet is that in the event of war we may be able to overcome our possible enemies on the sea, we should so design our battleships that they will at least equal those of our possible enemies in all of their fighting qualities—speed, gun-power, height of gun positions, protection, &c. (2) That, subject to the above requirements, it is always desirable to increase the speed a certain reasonable amount. Incidentally it may be remarked that this indicates the advisability of developing maximum speed with minimum coal consumption by placing all similar vessels in continuous competition in steaming, much in the same manner that we utilise the competitive principle in developing their maximum gun-power. (3) That it is always desirable to substitute heavy turret guns, such as 12-in., for the equivalent weight of the usual intermediate guns (6-in., &c.); in other words, that the "all-big-gun" one-calibre ship affords the greatest possible capacity of effective hitting. (4) That in order to simplify fire control, and attain its maximum efficiency, all of the main-battery guns of ships of whatever type should be of the same calibre. (5) That for similar reasons all of the torpedo defence guns should be of the same calibre. (6) That very important tactical advantages are obtained by the concentration of many heavy guns on each large vessel of high speed, and the consequent intense concentration of heavy-gun fire due to the tactics of the fleet. (7) That the tactical advantages of size, speed, and diminished numbers are of much greater importance than any advantages to be obtained from the increased number of smaller and slower vessels that may be built at the same total cost.

In addition to the superior individual and tactical advantage of large vessels, they also possess the following minor advantages:—(1) A fleet of ten 20,000-ton ships, each having a broadside fire of eight 12-in. guns, or eighty in all, would cost about 100,000,000 dols. (2) A fleet of twenty smaller vessels, each having a broadside fire of four 12-in. guns, or eighty in all, would cost about 120,000,000 dols. or 130,000,000 dols. (though I previously assumed the cost of these fleets to be equal, in order to accentuate the tactical value of large ships). (3) It requires less men to man the main-battery guns on an "all-big-gun" ship than a mixed battery ship; for example, it requires less men to serve the ten 12-in. guns of the Dreadnought than the four 12-in. and sixteen 6-in. guns of the Missouri. (4) It will require no more men for the Dreadnought's crew than it would for the Missouri's, if she had the full complement of men (as measured by European standards), which neither she nor any of our battleships have. (5) The complement of officers of the Dreadnought is not as great as should be that of the Missouri or Louisiana, because the former requires one fire-control party, while the latter ships require respectively two and three parties, as well as more officers to command the guns. (6) Then assuming 800 men and twenty combatant officers in each ship, it would require 8000 men and 200 officers for ten "all-big-gun" ships, and about 16,000 men and 400 officers for the fleet of small vessels having the same broadside fire. (7) It will cost nearly twice as much to dock as the ten large ones, and the latter can be docked in one-half the time, which is a great advantage in time of war. (Captain Mahan notes that the absence of a big ship for docking, coaling, &c., reduces the strength of the fleet more than the absence of a small one, but he neglects to note that with twice as many ships in the fleet there will be twice as many absentees in a given time.) (8) From the above it is clear that the cost of maintaining a fleet of small vessels having the same broadside fire as a fleet of large ones (of double the individual broadside fire) will be nearly twice as much as that for a fleet of large vessels of about the same total man-power. (9) I understand that the cost of maintaining a battleship is near 1,000,000 dols. a year; therefore the yearly maintenance of a fleet of ten large vessels would cost about 10,000,000 dols. less than that of the twenty smaller ones. (10) The final conclusion is, that for the sum that it would cost to maintain the twenty small battleships we could maintain a fleet of ten large ones, that would be greatly superior in tactical qualities, in effective hitting capacity, speed, protection, and inherent ability to concentrate its gun-fire, and have a sufficient sum left over to build one 20,000-ton battleship each year, not to mention needing fewer officers and men to handle the more efficient fleet.

THE RT. HON. G. SHAW-LEFEVRE'S REVIEW

IN

THE SPEAKER

OF

THE *NAVAL ANNUAL* OF 1903.

ON EXTRAVAGANT EXPENDITURE.

A MOST striking confirmation of the views which I expressed a few weeks ago in your Budget supplement on the extravagance of our naval expenditure in the last few years is afforded by the recent volume of the *Naval Annual.*

It is more convincing because Lord Brassey and his son, Mr. T. A. Brassey, who for so many years have successively edited and compiled this work, have been largely responsible for the revival of interest of late years in the Navy, and for creating that frame of mind which has made the public so long indifferent to the cost. As a result, the flood-gates of expenditure have been opened, and the civilian element in the Government has lost all control over the demands of naval officers. It appears, however, that the yearly growth of the Navy Estimates has at last reached a point which has alarmed even these naval critics, and as a result the *Naval Annual* for this year is one long protest against extravagant expenditure and a most forcible plea for economy. In the preface to the work Mr. T. A. Brassey writes as follows:—

> "The large and continued increase in the Estimates of the Navy, accompanied, as it is, by a heavy increase in the Army Estimates, will, we fear, produce a reaction which will have most serious consequences on the future defence of the Empire. The results of the recent by-elections may be taken as some indication that such a reaction has begun, and that the electorate does not approve the unchecked growth of public expenditure.
>
> "*Great Britain is practically maintaining her Fleet on a war footing in time of peace.*
>
> "Nearly all our effective battleships are in commission. Additions have been recently made to the battleship strength of the British Mediterranean Fleet, which are not justified by the increased preparation of our possible enemies in the Mediterranean, for the French have a smaller force in commission and in reserve than they had a few years ago.
>
> "For many years the manning requirements of the Navy have been met by additions to the permanent force, and no serious attempt has been made to increase the Naval Reserves. Our manning policy compels us to keep a large number of ships in

> commission in time of peace in order to give the necessary training to the increased *personnel*. It has thrown a heavy burthen on the resources of the country, the financial effects of which in the charge for pensions are as yet hardly felt.
>
> "In another direction our policy is equally extravagant. Immense sums of money are lavished on naval works, and while at Portsmouth and Chatham obsolete ships crowd the basins, and building slips are empty, it is proposed to establish another dockyard in the Firth of Forth."

Lord Brassey develops in detail this charge of extravagance and waste. He complains that the Estimates for the present year have increased, as compared with last year, by over £3,000,000, in spite of the fact that peace has been achieved in the interval, and that there is no longer any fear of the intervention of other European Powers in the war in South Africa, which was the main justification for the large increase of naval estimates in the previous two years:

> "Heavy increases of expenditure," he says, "for warlike preparations are a strange sequel to the restoration of peace."
>
> "Our present expenditure is increasing beyond all precedent."
>
> "Can these charges be borne without detriment to national progress and prosperity?"

He points out that the naval expenditure of the Empire, including about half a million by the Indian Government and £200,000 by the Commonwealth of Australia, and including, also, the expenditure in naval works provided for out of loans, will amount in the present year to £38,143,000, or nearly four millions in excess of the aggregate expenditure of France, Russia, and Germany combined. That of France is estimated at £12,524,000, at which point it has been stationary for the last three or four years. In comparing the estimates of this country with those of France and Russia he points out that we build ships in this country at a very much lower cost.

* * * * *

It is, however, in respect of the *personnel* of the Navy that Lord Brassey's remarks on the extravagance of the last few years are most pointed and significant. In the last ten years there has been a continuous yearly increase of numbers from 70,000 to 125,000, at an additional cost of £4,000,000 a year. This addition will eventually double the amount of the ineffective votes for pensions and retired pay, which now amount to £2,320,000. While this enormous increase has been made of the active service the reserves have been neglected, and stand at much the same numbers they were. Lord Brassey suggests that exactly the opposite course should have been taken, and that the reserves should have been largely increased and the active service reduced.

> "The policy of training men for a few years, and then passing them into the reserve, has been adopted by all naval Powers except Great Britain. It is based on a consideration of the numerous unskilled duties which have to be performed on board modern ships of war. . . . It is a ruinous policy to train up skilled men for the performance of unskilled duties."

He points out that in vessels such as the Cressy, out of 615 officers and men, only 177 are required to work all the guns, and that of these a considerable proportion could be replaced by absolutely untrained men. This enormous increase of the *personnel* has necessitated, as Mr. Brassey has told us, the keeping an excessive number of ships in commission, and Lord Brassey points out that most of our foreign squadrons are overcrowded with them. "A reduction," he says, "should be made in the non-effective ships in commission, our *poussière navale.* With the powerful cruiser squadron and the Channel Fleet ready, a reduction should be possible in our Atlantic squadrons." On the Pacific station and the Indian station he points out that "no other European flag is shown there." In the China seas, where an enormous fleet is maintained, with a *personnel* of 8000 men, and at a cost of £1,430,000 a year, he thinks that now the war with China is over and a treaty offensive and defensive has been made with Japan, which has a most powerful Fleet, a reduction should be possible by the withdrawal of smaller vessels.

By making an addition to reserves, it should be possible to make a large reduction of the standing force of men, and to reduce largely the number of ships in commission. This would greatly relieve the cost of maintenance and repairs of ships, which has assumed gigantic proportions of late years, and would enable a reduction to be effected in the coal bill, which has risen to four or five times what it was a few years ago. The key to the whole question of economy in the *personnel,* in the number of ships in commission, and in the cost, maintenance, and repairs is to be found in the fact that in days of mastless vessels the number of trained seamen and gunners required is comparatively small, and that the residue may be provided either by reserves or by men obtained from the merchant service, who would be set free in the event of war.

Mr. T. A. Brassey devotes another chapter to exposing the extravagance of late years on naval works, harbours, barracks, etc. He shows that the policy of erecting such works out of loans, initiated by Mr. Goschen in 1895 by a bill providing for £8,806,000, has been developed in each successive year till the last Act of the kind has increased the provision for expenditure to £27,500,000. They provide for five practically new harbours or dockyards, for the extension of fourteen old ones, and for the erection of barracks and hospitals at eleven different places. Mr. Brassey says: "*L'appétit vient en mangeant.* Many of the works were undoubtedly necessary, some appear to be unnecessary, while the wisdom of constructing others is at least open to question."

He goes into details of most of these works. Of those at

Dover, which are to cost £3,500,000, he says that the only justification from a naval point of view for this huge expenditure was the desirability of providing a base for a fleet operating in the North Sea. The provision of a second base on the Firth of Forth appears unnecessary. The cost of this new harbour and dockyard is not included in the amount authorised by the Act of 1901, but it is understood that the Naval Works Bill for the present year will include several more millions for this new proposal. The whole of this chapter of Mr. Brassey's, and his comments on the extravagant works at Simon's Bay, Hong Kong, Bermuda, and elsewhere, are eminently worthy of consideration. When provision is made for new works by way of loan there appears to be no check whatever upon the caprices of experts, with the result probably that a future generation will condemn the greater number of them as fully as the present generation condemns the folly of the harbour and fortifications of Alderney.

* * * * *

The impression left on one's mind after reading these indictments of extravagance by these eminent exponents of Liberal Imperialism is that the time is at hand when a more sober view will be taken of the naval wants of this country in times of peace, and when an effort may be made, with the general concurrence of Liberals, to return to the expenditure of three or four years ago, before the recent war. It is obvious that millions might be saved without any substantial reduction of efficiency.

G. SHAW-LEFEVRE.

INDEX.

A

Abdul Hamid, 259, plate 63
„ Medjidieh, 259, plate 63
Aboukir, 52, 192, plate 9
Abrek, 252
Acheloos, 234
Achéron, 217
Achilles, 8, 52, 192, plate 7
Adamastor, 248
Admiral Korniloff, 252
„ Makaroff, 31, 52, 250
Adventure, 10, 200
Adzuma, 52, 240, plate 48
Aegir, 51, 227
Æolus, 54, 200
Aeran, 257, plate 61
Africa, 2, 50, 192, plate 2
Afridi, 11, 271
Agamemnon, 6, 50, 192, plate 1
Agordat, 237
Akagi, 242
Akashi, 54, 242
Aki, 28, 50, 240
Akitsushima, 54, 242
Alabama, 50, 260, plate 67
Albany, 54, 263
Albemarle, 50, 192, plate 3
Albion, 50, 192, plate 4
Alexander II., 250
Alger, 54, 222
Almaz, 54, 252
Almirante Brown, 208
„ Condell, 214
„ Grau, 38, 268
„ Lynch, 214
„ O'Higgins, 214, plate 18
„ Simpson, 214
„ Tamandare, 213
Alphios, 234
Amalfi, 26, 52, 235, plate 42
Amazon, 11, 271
Amazone, 54, 230
Amethyst, 10, 54, 200, plate 10
Amiral Aube, 52, 217, plate 29
„ Baudin, 51, 217, plate 27
„ Tréhouart, 51, 221, plate 25
Ammiralgio di St. Bon, 50, 235, plate 40
Amphitrite (British), 52, 200, plate 10
„ (United States), 262
Andrada, 213
Andrea Doria, 51, 235, plate 41
Andrei Pervozvannui, 30, 50, 250, plate 54
Andromache, 55, 207
Andromeda, 52, 200, plate 10
Annapolis, 263
Anson, 51, 192
Antrim, 52, 192, plate 8
Apollo, 55, 207
Arcona, 54, 230
Aretusa, 237
Argentine Republic, Naval programme, 37
Argonaut, 52, 200, plate 10
Argyll, 52, 192, plate 8
Ariadne (British), 52, 200, plate 10
„ (German), 54, 230
Arkansas, 51, 260, plate 66
Armament, different opinions as to, 4, 5
„ Lessons of Russo-Japanese War, 5
Armoured ships, Argentine, List of, 208
„ Austria-Hungary, List of, 210
„ Brazil, List of, 212
„ British „ 192–199
„ Chili „ 214
„ Denmark, List of, 216
„ France, „ 217–221
„ Germany „ 227–229
„ Greece „ 234
„ Italy „ 235–236

Armoured ships, Japan, List of, 240, 241
,, Netherlands ,, 244
,, Norway ,, 247
,, Portugal ,, 248
,, Russia, ,, 250, 251
,, Spain ,, 255
,, Sweden, ,, 257
,, Turkey ,, 259
,, United States, List of, 260-262
Arno, 209
Arpád, 210, plate 14
Arrogant, 53, 200
Asahi, 50, 240, plate 46
Asama, 50, 240, plate 49
Askold, 53, 252, plate 58
Aso, 29, 52, 240, plate 49
Aspern, 211
Assar-i-Tewfik, 38, 259
Astræa, 54, 200
Atlanta, 263
Attentive, 200
Aurora, 53, 252
Austria-Hungary, Naval Estimates, 37
,, Naval programme, 37
,, Ships struck off List of Fleet, 37
Auxiliary cruisers, British, List of, 207
,, France ,, 226
,, Germany ,, 233
,, Italy ,, 239
,, Russia ,, 254
,, United States, List of, 266

B.

Babenberg, 210, plate 14
Bacchante, 52, 192, plate 9
Baden, 227
Baden (Ersatz), 23, 227
Baltimore, 54, 263
Bancroft, 263
Barfleur, 50, 192, plate 5
Barham, 200
Barroso, 213
Battleships, British, 50, 51
,, British and foreign compared, 50, 51
,, French, 50, 51
,, German, 50, 51
,, in commission in European waters, 43
,, Italian, 50, 51
,, Japanese, 50, 51
,, Relative strength in, 47-49
Battleships, Russian, 50, 51
,, United States, 50, 51
Bayan, 31, 52, 250
Bayern, 227
Bayern (Ersatz), 50, 227
Bedford, 52, 193, plate 8
Belgium, Ships belonging to, 267
Bellerophon, 50, 193
Benbow, 51, 193
Benedetto Brin, 50, 235, plate 39
Benjamin Constant, 213
Bennington, 263
Beowulf, 51, 227
Berlin, 54, 230
Berwick, 52, 193, plate 8
Birmingham, 54, 263
Black Prince, 52, 193, plate 7
Blake, 201
Blanco Encalada, 214, plate 19
Blenheim, 201
Blitz, 211
Boadicea, 201
Bogatyr, 53, 252, plate 59
Bombe, 222
Bonaventure, 54, 201
Boston, 263
Bouvet, 50, 217
Bouvines, 51, 217, plate 25
Brandenburg, 50, 227, plate 35
Braunschweig, 24, 50, 227, plate 33.
Brazil, Naval programme, 37
Bremen, 54, 230
Brennus, 50, 217, plate 25
Brilliant, 54, 201
Britannia, 2, 50, 193, plate 2
British and Foreign Ordnance Tables, 287-307
British and Foreign Ships, list of, 191-272.
British Navy, Armoured cruisers completed and building, 7-9
,, Atlantic Fleet, 41, 324
,, Battleships built and building, 47
,, Battleships completed during 1906, 1, 2, 318, 361
,, Battleships in commission in European waters, 43
,, Channel Fleet, 41, 324
,, Coastal destroyers, 11
,, Constitution of the Home Fleet, 40-42
,, Criticism of naval programme, 1, 2
,, Cruisers completed in 1906, 318, 361
,, Cruisers, need of, 10, 49, 72

British Navy, Cruiser Squadrons, 41, 323-325
,, Destroyers completed, 10
,, Distribution of the Fleet, 320-322
,, Eastern Fleet, 45, 323
,, East Indies and Cape of Good Hope Squadron, 45, 323
,, Effective fighting ships, built and building, 56
,, Estimates for 1907-8, 311-368
,, Gunnery practice of the Fleet, 12, 317, 369-374
,, Home Fleet, 41, 149, 325
,, Manœuvres of 1906, 76-101, 326
,, Mediterranean Fleet, 41, 323
,, Naval Reserves, 13, 14, 148, 331-333
,, Naval Works, 13, 342-347
,, New torpedo boats, 11, 271
,, Ocean-going destroyers, 11, 271
,, *Personnel*, 313-317, 327-330
,, Progress of, 1-11
,, Reduced new construction, 13, 69
,, Reorganization of fleets, 42-45
,, Reorganization of Navy, 142-153
,, River gunboats, 207
,, Shipbuilding and repairs, 318-320
,, Ships removed from effective list, 199, 207
,, Ships sold during 1906, 9, 10
,, Submarines, 271
,, The laws of the Navy, 154-174
,, Torpedo craft in Home waters, 324, 325
,, Trials of new destroyers, 10
British Shipbuilding programmes, 57-75
,, Advantage given to foreigners, 71
,, Advantage of cheap and rapid construction, 67, 68
British Shipbuilding, Cost of ships and armaments, 65-67
,, Distribution of work in Royal and private yards, 74, 75
,, Need of more cruisers, 72
,, Policy of Dreadnought and Invincible class, 76
,, Principles and practice of, 57-65
,, Reduced programme justified, 69
,, Standard of naval strength, 62, 68
,, Unnecessary haste in construction of untried new classes, 78
Brooklyn, 52, 260, plate 71
Bruix, 53, 217,
Budapest, 210, plate 15
Buenos Aires, 209, plate 18
Bulgaria, Ships belonging to, 267
Bulwark, 50, 193, plate 3
Bussard, 230

C.

Cæsar, 50, 193, plate 4
Caïman, 51, 217, plate 27
Calabria, 54, 237
Calatafini, 237
California, 52, 260, plate 69
Cambrian, 54, 201
Camperdown, 51, 193
Canopus, 50, 193, plate 4
Capitão Prat, 214, plate 18
Caprera, 237
Captain Sacken, 252
Caramuru, 213
Carlo Alberto, 53, 235, plate 43
Carnarvon, 52, 193, plate 8
Carnot, 50, 217, plate 24
Casabianca, 222
Cassard, 54, 222
Cassini, 222
Castine, 263
Cataluña, 255
Catherine II., 51, 250
Catinat, 54, 222
Cécille, 222

Centurion, 50, 193, plate 5
Cesarevitch, 50, 250, plate 55
Chacabuco, 214
Challenger, 53, 201
Chanzy, 53, 217
Charlemagne, 50, 217, plate 23
Charles Martel, 50, 217
Charleston, 52, 260, plate 70
Charner, 53, 218
Charybdis, 54, 201
Chasseloup-Laubat, 54, 222
Châteaurenault, 53, 222
Chattanooga, 263
Chester, 54, 263
Chicago, 54, 263
Chihaya, 242
Chili, Ships belonging to, 214
Chin-Yen, 240, plate 47
Chitose, 53, 242
Chiyoda, 54, 240
Cincinnati, 54, 263
Circe, 201
Claes Horn, 258
Claes Uggla, 258
Cleveland, 263
Coatit, 237
Cochrane, 8, 52, 193, plate 7
Collingwood, 199
Colombia, Ships belonging to, 267
Colonies and Imperial Defence, 15, 16
Colorado, 52, 260, plate 69
Colossus, 51, 193, 199
Columbia, 53, 263, plate 71
Comet, 230
Comet (Ersatz), 24, 54, 232
Commonwealth, 50, 193, plate 2
Comparative Naval Expenditure, 1896–1906, 386
Comparative Strength of Navies, 39–49
Comparative Tables, British and Foreign battleships, 50, 51
Comparative Tables, British and Foreign cruisers, 52–55
Concord, 263
Condé, 52, 218, plate 29
Condor (French), 222
Condor (German), 230
Condorcet, 20, 50, 218, plate 21
Connecticut, 31, 50, 260, plate 65
Conqueror, 199
Cormoran, 230
Cornwall, 52, 194, plate 8
Cornwallis, 50, 194, plate 3
Coronel Bolognesi, 38
Cosmao, 54, 222
Cossack, 10, 271
Couleuvrine, 222
Courbet, 51, 218, plate 28
Crescent, 53, 201
Cressy, 52, 194, plate 9
Cristoforo Colombo, 237
Cruisers, British, 52–55
  „ British and Foreign compared, 52–54
  „ French, 52–54
  „ German, 52–54
  „ Italian, 52–54
  „ Japanese, 52–54
  „ Russian, 52–54
  „ United States, 52–54
Cruising Ships, Argentine, List of, 209
  „ Austria-Hungary, List of, 211
  „ Brazil, List of, 213
  „ British, List of, 200–207
  „ British Naval Reserved Merchant, List of, 207
  „ Chili, List of, 214
  „ China, List of, 215
  „ Denmark, List of, 216
  „ France, List of, 222–225
  „ France, Merchant Cruisers, List of, 226
  „ Germany, List of, 230–232
  „ Germany, Merchant Cruisers, List of, 233
  „ Greece, List of, 234
  „ Italy, List of, 237–239
  „ „ Merchant Cruisers, List of, 239
  „ Japan, List of, 242, 243
  „ Netherlands, List of, 245, 246
  „ Norway, List of, 247
  „ Portugal, List of, 248, 249
  „ Russia, List of, 252, 253
  „ Russia, Auxiliary Cruisers, List of, 254
  „ Spain, List of, 256
  „ Sweden, List of, 258
  „ Turkey, List of, 259
  „ United States, List of, 263–265
  „ United States Merchant Cruisers, List of, 266
Cumberland, 52, 194, plate 8
Curtatone, 237
Cyclope, 237

D.

Dandolo, 51, 235
Danton, 20, 50, 218, plate 21

Danzig, 54, 230
D'Assas, 54, 223
Davout, 54, 223
Décidée, 223
Defence, 8, 52, 194, plate 6
Defence, Principles of, The "Blue Water School," 175-187
Démocratie, 21, 50, 218, plate 21
Denver, 264
D'Entrecasteaux, 53, 223
De Ruyter, 244, plate 51
Desaix, 53, 218, plate 30
Descartes, 54, 223
Des Moines, 264
D'Estrées, 54, 223
Destructor, 256
Detroit, 54, 264
Deutschland, 24, 50, 227, plate 33
Devastation, 51, 194
Dévastation, 51, 218
Devonshire, 52, 194, plate 8
Diadem, 52, 201, plate 10
Diamond, 54, 201, plate 10
Diana (British), 53, 201
  ,, (Russian), 53, 252
Diderot, 20, 50, 218, plate 21
Dido, 53, 201
D'Iberville, 223
Dogali, 54, 237
Dolphin, 264
Dom Carlos I, 248
Dominion, 50, 194, plate 2
Don Alvaro de Bazán, 256
Doña Maria de Molina, 256
Donegal, 52, 194, plate 8
Don Juan de Austria, 264
Doris, 53, 201
Dragonne, 223
Drake, 52, 194, plate 9
Dreadnought, 2-4, 6, 50, 194, 318, plate 1
Dreadnought type of battleship, Tactical qualities of, 391-409
Dristigheten, 257, plate 62
Dryad, 202
Dubuque, 264
Du Chayla, 54, 223
Duilio, 235
Duke of Edinburgh, 52, 194, plate 7
Duncan, 50, 194, plate 3
Dunois, 223
Dupetit-Thouars, 52, 218, plate 30
Dupleix, 53, 218, plate 30
Dupuy-de-Lôme, 53, 219
Dvenadzat Apostoloff, 51, 250

E.

E. (German armoured cruiser), 52, 227
Eclipse, 53, 202
Ecuador, Ships belonging to, 267
Edgar, 53, 202
Edgard Quinet, 9, 22, 52, 219
Edinburgh, 51, 195
Effective fighting ships, built and building, 56
Egypt, Ships belonging to, 267
Eidsvold, 247, plate 53
Elba, 54, 237
Elsass, 50, 227, plate 33
Emanuele Filiberto, 50, 235, plate 40
Emperador Carlos V., 255, plate 60
Empress of India, 195, plate 6
Encounter, 53, 202
Endymion, 53, 202
Epervier, 223
Ernest Renan, 22, 52, 219, plate 28
Erzherzog Ferdinand Max, 210
  ,, Friedrich, 37, 210, plate 14
  ,, Karl, 37, 210, plate 14
Esmeralda, 214, plate 19
Espora, 209
Essex, 52, 195, plate 8
Etna, 54, 238
Etruria, 54, 238
Euridice, 238
Europa, 52, 202, plate 10
Eurotas, 234
Euryalus, 52, 195, plate 9
Evertsen, 244, plate 51
Evstafi, 250
Exmouth, 50, 195, plate 3
Extremadura, 256

F.

F. (German Armoured Cruiser), 23, 227
Falke, 230
Faucon, 223
Fei-Ying, 215
Fiermosca, 54, 238
Flèche, 223
Fleurus, 223
Flora, 54, 202
Florida, 51, 260, plate 66
Foo-Ching, 215
Forbin, 54, 223
Foresight, 202
Formidable (British), 50, 195, plate 3
Formidable (French), 51, 219, plate 27
Forte, 54, 202
Forward, 202
Foudre, 223
Fox, 54, 202
France, Battleships built and building, 47
  ,, Battleships in commission in European waters, 43

France, Effective fighting ships, built and building, 56
  ,, Mediterranean Squadron, 41
  ,, Naval Estimates, 17, 376–379
  ,, Naval Manœuvres of 1906, 102–109
  ,, Naval Policy, 17–20
  ,, New battleships and cruisers, 20–22
  ,, Northern Squadron, 41
  ,, Programme of new construction, 378, 379
  ,, Reorganization of Fleets, 42
  ,, Submarines, 22, 275, 276
  ,, Torpedo craft, 22, 274–276
Francesco Ferrucio, 52, 235, plate 42
Francesco Morosini, 51, 235, plate 41
Frauenlob, 54, 230
Freja, 258
Freya, 53, 230
Friant, 54, 223
Friedrich Karl, 52, 227
Friesland, 245
Frithjof (German), 51, 227
Frithjof (Norwegian), 247
Fuji, 50, 240, plate 46
Furieux, 51, 219
Furious, 53, 203
Fürst Bismarck, 52, 227, plate 37
Fylgia, 257, plate 62

G.

Galilée, 54, 224
Galveston, 264
Garibaldi, 208, plate 12
Gaucho, 209
Gaulois, 50, 219, plate 23
Gazelle, 54, 230
Gefion, 54, 230
Geier, 231
Geiser, 216
Gelderland, 245
General Baquedano, 214
General Belgrano, 208, plate 12
General San Martin, 208, plate 12
Georgia, 31, 50, 260, plate 65
Georgi Pobiedonosetz, 51, 250
German Navy, Active Battle Fleet, 41
  ,, Battleships built and building, 47
  ,, Battleships in commission in European waters, 43
  ,, Effective fighting ships, built and building, 56
  ,, Estimated cost of new battleships, 23
German Navy, Estimates for 1907, 380, 381
  ,, New Battleships and Cruisers, 23, 24
  ,, *Personnel*, 25
  ,, Reorganization of Active Squadron, 42
  ,, Shipbuilding programme, 23–25
  ,, Torpedo craft, 25, 276
Ghoorka, 11, 271
Gibraltar, 53, 203
Giovanni Bausan, 54, 238
Giuseppe Garibaldi, 52, 235, plate 42
Gladiator, 53, 203
Gloire, 52, 219, plate 29
Glory, 50, 195, plate 4
Gneisenau, 24, 52, 227, plate 35
Goito, 238
Goliath, 50, 195, plate 4
Good Hope, 52, 195, plate 9
Gossamer, 203
Göta, 257
Governolo, 238
Grafton, 53, 203
Greece, new torpedo destroyers, 37
  ,, Ships belonging to, 234
Greif, 231
Greif (Ersatz), 232
Griden, 252
Gromoboi, 31, 52, 250, plate 57
Grozjastchy, 250
Gueydon, 52, 219, plate 30
Guichen, 53, 224
Gunnery Practice of the British Fleet, 12, 317, 369–374
  ,, ,, United States Fleet, 36, 37
Gustavo Sampaio, 213

H.

Habsburg, 210, plate 14
Hagen, 51, 228
Hai-Chi, 215
Hai-Shen, 215
Hai-Shew, 215
Hai-Yung, 215
Halcyon, 203
Hamburg, 54, 231
Hamidieh, 259
Hampshire, 52, 195, plate 8
Hannibal, 50, 195, plate 4
Hannover, 50, 228, plate 33
Hansa, 53, 231
Harald Haarfagre, 247.
Harrier, 203
Hashidate, 54, 242
Hawke, 53, 203

Hayti, Ships belonging to, 267
Hazard, 203
Hebe, 203
Heibetnuma, 259
Heimdal (Danish), 216
Heimdall (German), 51, 228
Hekla, 216
Hela, 231
Helena, 264
Helgoland, 216
Henri IV., 51, 219, plate 23
Herluf Trolle, 216, plate 20
Hermes, 53, 203
Hermione, 54, 203
Hero, 199
Hertha, 53, 231
Hertog Hendrik, 244, plate 51
Hessen, 50, 228, plate 33
Hibernia, 2, 50, 195, plate 2
Highflyer, 53, 203
Hildebrande, 51, 228
Hindustan, 50, 195, plate 2
Hi-Ying, 215
Hizen, 29, 50, 240, plate 45
Hoche, 51, 219, plate 26
Hogue, 52, 195, plate 9
Holland, 245
Hood, 195, plate 6
Howe, 51, 196
Hussar, 203
Hyacinth, 53, 203
Hydra, 234, plate 38

I.

Ibuki, 29, 52, 240
Idaho, 50, 260, plate 64
Idzumi, 242
Idzumo, 52, 240, plate 48
Iéna, 50, 219
Iki, 51, 240
Ikoma, 9, 29, 52, 240
Illinois, 50, 260, plate 67
Illustrious, 50, 196, plate 4
Iltis, 231
Imperator Pavel I., 30, 50, 251, plate 54
Imperial Defence and the Colonies, 15, 16
Implacable, 50, 196, plate 3
Indefatigable, 54, 204
Independencia, 208, plate 12
Indiana, 50, 260, plate 68
Indomitable, 9, 52, 196
Indomptable, 51, 219, plate 27
Infernet, 54, 224
Inflexible, 9, 52, 196
Intrepid, 55, 207
Invincible, 9, 52, 196.
Ioann Zlatoust, 50, 251
Iowa, 50, 260, plate 68
Iphigenia, 54, 204
Irene, 54, 231
Iride, 238
Irresistible, 50, 196, plate 3
Isis, 53, 204,
Isla de Cuba, 264
Isla de Luzon, 264
Isly, 54, 224
Italia, 235, plate 41
Italian Navy, Battleships built and building, 47
  ,, Effective fighting ships, built and building, 56
  ,, Estimates for 1907-8, 26, 382, 383
  ,, Manœuvres of 1906, 109-111
  ,, New armoured cruisers, 26
  ,, New destroyers, 27
  ,, *Personnel*, 26
  ,, Programme of construction, 26, 383
  ,, Strength of, 25
  ,, Torpedo craft, 277
Itsukushima, 54, 242
Iver Hvitfeldt, 216
Iwami, 29, 50, 240, plate 54
Iwate, 52, 240, plate 48

J.

Jacob Bagge, 258
Jacob van Heemskerck, 244
Jagd, 231
Jagd (Ersatz), 232
Jaguar, 231
Japan, Battleships built and building, 47
  ,, Cost of war with Russia, 27
  ,, Effective fighting ships, built and building, 56
  ,, Naval Estimates, 27
  ,, New construction and shipbuilding programme, 28
  ,, *Personnel*, officers, 30
Jason, 204
Jauréguiberry, 50, 219, plate 24
Jean Bart, 224
Jeanne d'Arc, 52, 219, plate 31
Jemmapes, 51, 219, plate 25
Jemchug, 54, 252
Jules Ferry, 21, 52, 219, plate 29
Jules Michelet, 22, 52, 220
Juno, 53, 204
Jupiter, 50, 196, plate 4
Jurien de la Gravière, 53, 224, plate 32
Justice, 21, 50, 220, plate 21

K.

Kagul, 53, 252
Kaiser Barbarossa, 50, 228, plate 34
,, Franz Josef I., 211
,, Friedrich III., 50, 228, plate 34
,, Karl der Grosse, 50, 228, plate 34
,, Karl VI., 210, plate 16
,, Wilhelm der Grosse, 50, 228, plate 34
,, Wilhelm II., 50, 228, plate 34
Kaiserin Augusta, 53, 231
,, Elizabeth, 211
,, Maria Theresia, 210, plate 16
Kansas, 31, 50, 260, plate 65
Kasagi, 53, 242
Kashima, 28, 50, 241, plate 44
Kasuga, 52, 241, plate 48
Katahdin, 262
Katori, 28, 50, 241, plate 44
Katsuraki, 242
Kazarsky, 252
Kearsarge, 50, 261, plate 67
Kent, 52, 196, plate 8
Kentucky, 50, 261, plate 67
Kersaint, 224
Khivinetz, 252
Khraby, 251
Kien-Gnan, 215
Kien-Wei, 215
King Alfred, 52, 196, plate 9
King-Ching, 215
King Edward VII, 28, 50, 196, plate 2
Kléber, 53, 220, plate 30
Komet, 211
Königsberg, 54, 231
Koningin Regentes, 244, plate 51
Koningen Wilhelmina der Nederlanden, 244, plate 52
Koreiets, 252
Kortenaer, 244, plate 51
Kubanetz, 253
Kurama, 9, 29, 52, 251
Kurfürst Friedrich Wilhelm, 50, 228, plate 35
Kwang-Ting, 215

L.

La Hire, 224
Lalande, 54, 224
Lancaster, 52, 196, plate 8
Lance, 224
Latona, 54, 204
Latouche-Tréville, 53, 220
Lavoisier, 54, 224
Laws of the British Navy, 154–174
,, Changes beneficially affecting officers, 163–167
Laws of the British Navy, Changes beneficially affecting men, 163, 167–172
,, Changes beneficially affecting Marine Corps, 172–174
,, Changes in *matériel* affect *personnel*, 154, 155
,, Contents of the King's Regulations, 158–162
,, Evolution of the King's Regulations, 155, 156
,, The Navy List, 157, 158
Leda, 204
Léger, 225
Leipzig, 54, 231
Léon Gambetta, 52, 220, plate 29
Leopard, 211
Lepanto (Italian), 235, plate 41
Lepanto (Spanish), 256
Leviathan, 52, 196, plate 9
Lévrier, 225
Libertad, 208, plate 12
Liberté, 21, 50, 220, plate 21
Lieutenant Ilyn, 253
Liguria, 54, 238
Linois, 54, 225
Lombardia, 54, 238
London, 50, 197, plate 3
Lord Brassey on Naval Policy, 127–141
Lord Nelson, 6, 50, 197, plate 1
Lothringen, 24, 50, 228, plate 33
Louisiana, 50, 261, plate 65
Lübeck, 54, 231
Luchs, 231
Lussin, 211
Lutfi-Hamayoun, 259

M.

Machias, 264
Magami, 29, 242
Magenta, 51, 220, plate 26
Magnet, 211
Magnificent, 50, 197, plate 4
Maine, 50, 261, plate 66
Majestic, 50, 197, plate 4
Makigumo, 242
Manligheten, 257, plate 61
Maranhao, 212
Marblehead, 54, 264
Marceau, 51, 220, plate 26
Marco Polo, 53, 236
Marietta, 264
Marqués de la Victoria, 256
Marqués de Molíns, 256
Mars, 50, 197, plate 4
Marseillaise, 52, 220, plate 29
Marshal Deodoro, 212, plate 17
Marshal Floriano, 212, plate 17
Marten Tromp, 244, plate 51

Martin Alonso Pinzón, 256
Maryland, 52, 261, plate 69
Massachusetts, 50, 261, plate 68
Masséna, 50, 220
Matsushima, 54, 242
Maya, 242
Mecklenburg, 50, 228, plate 34
Medea, 55, 207
Medusa (British), 55, 207
,, (German), 54, 231
Melampus, 55, 207
Menadnock, 262
Mercantile Auxiliaries, 137–140
Messoudieh, 259, plate 63
Meteor, 211
Mexico, Ships belonging to, 267
Miantonomoh, 262
Michigan, 32, 50, 261, plate 64
Mikasa, 28, 50, 241, plate 44
Milwaukee, 52, 261, plate 70
Minerva (British), 53, 204
,, (Italian), 238
Ministro Zentino, 214
Minneapolis, 53, 264, plate 71
Minnesota, 32, 50, 261, plate 65
Minotaur, 8, 52, 197, plate 6
Mirabeau, 20, 50, 220, plate 21
Mishima, 29, 51, 241
Mississippi, 50, 261, plate 64
Missouri, 50, 261, plate 66
Mohawk, 11, 271
Monarch, 210, plate 15
Monmouth, 52, 197, plate 8
Montebello, 239
Montagu, Loss of the, 7
Montana, 32, 52, 261, plate 70
Montcalm, 52, 220, plate 30
Monterey, 51, 261
Montgomery, 54, 264
München, 54, 231
Musashi, 242

N.

Naiad, 55, 207
Namet, 259
Naniwa, 54, 242
Nan-Schuin, 215
Nan-Ting, 215
Napoli, 26, 50, 236, plate 39
Nashville, 264
Natal, 8, 52, 197, plate 7
Naval Estimates, Austria-Hungary, 37, 375
,, British, 12, 348–368
,, British, First Lord's Explanatory Statement, 311–347
,, French, 17, 376–379
.. German, 380, 381
Naval Estimates, Italian, 26, 382, 383
,, Netherlands, 38
,, Russian, 30, 384
,, United States, 37, 385
Naval Manœuvres of 1906, British, 76–101
,, French, 102–109
,, Italian, 109–111
Naval Policy, Notes on, by Lord Brassey, 127–141
Nebraska, 31, 50, 261, plate 65
Neptune, 220, plate 26
Netherlands, Gun vessels of the Dutch Indian Navy, 245, 246
,, Naval programme, 38
Nevada, 51, 261, plate 66
Newark, 54, 264
New Hampshire, 32, 50, 261, plate 65
New Jersey, 50, 261, plate 65
New Orleans, 54, 265
Newport, 265
New York, 52, 261
New Zealand, 50, 197, plate 2
Niger, 204
Niitaka, 54, 242, plate 50
Nile, 51, 197
Niobe (British), 52, 204, plate 10
Niobe (German), 54, 231
Nisshin, 52, 241, plate 48
Njord, 247
Noord Brabant, 246
Norge, 257
North Carolina, 32, 52, 262, plate 70
North Sea, Strategical features of the, 112–126
Nueva España, 256
Nueve de Julio, 209, plate 13
Nümancia, 255
Nürnberg, 24, 54, 231
Nymphe, 54, 231

O.

Ocean, 50, 197, plate 4
Oden, 257
Odin, 51, 228
Ohio, 50, 262, plate 66
Okinoshima, 51, 241
Oldenburg, 51, 228
Oleg, 53, 253, plate 59
Olfert Fischer, 216, plate 20
Olympia, 53, 265
Ordnance Tables, 287–307
,, Austrian Naval, 290
,, Bethlehem Steel Co., 305
,, British rifled, 287–289
,, Danish Naval, 291

Ordnance Tables, Dutch Naval, 292
„ Elswick guns, 301
„ French Naval, 293, 294
„ German Naval, 295
„ Italian Naval, 296
„ Krupp Q.F. guns, 304
„ Russian Naval, 297
„ Schneider-Canet guns, 303
„ Spanish Naval, 298
„ Sweden and Norway Naval, 299
„ Relating to Conversion of Measures, 306, 307
„ United States Naval, 300
„ Vickers, Sons & Maxim's Guns, 302
Oregon, 50, 262, plate 68
Ornen, 258
Oskar II., 257, plate 61
Otawa, 54, 243
Otchakoff, 53, 253

P.

Pactolus, 55, 207
Paducah, 265
Pallada, 31, 52, 251
Pampa, 209
Pamyat Azova, 53, 251
Pamyat Merkuria, 253
Pandora, 54, 205
Panteleimon, 50, 251, plate 55
Panther (Austrian), 211
Panther (German), 231
Pará, 212
Partenope, 239
Pascal, 54, 225
Pathfinder, 204
Patria (Argentine), 209
Patria (Portugal), 249
Patrie, 21, 50, 221
Patrol, 204
Pavel I., 30, 50, 251, plate 54
Peder Skram, 216, plate 20
Pegasus, 54, 205
Pelayo, 255, plate 60
Pelenk-i-deria, 259
Pelikan (Austrian), 211
Pelikan (German), 231
Pelorus, 54, 205
Pennsylvania, 52, 262, plate 69
Pernambuco, 212
Perseus, 54, 205
Peru, Ships belonging to, 268
Petrel, 265
Pfeil (Ersatz), 24, 54, 232
Philomel, 55, 205
Phlégéton, 221
Piemonte, 54, 239
Piet-Hein, 244, plate 51
Pioneer, 54, 205
Pique, 55, 207
Pisa, 52, 236, plate 42
Planet, 211
Pommern, 50, 229, plate 33.
Pomone, 55, 207
Pothuau, 53, 221, plate 31
Powerful, 52, 205, plate 11
Presidente Errázuriz, 214
Presidente Sarmiento, 209
Preussen, 50, 229, plate 33
Prince George, 50, 197, plate 4
Prince of Wales, 50, 197, plate 3
Princessa de Asturias, 255
Princeton, 265
Principles of Defence, The "Blue Water School," 175–187
„ Co-operation of naval and military forces necessary, 183–187
„ Difficulties of problem of defence, 175
„ Divergent opinions as to "Blue Water" principles, 177–180
„ Fundamental principles of naval defence, 180
„ Limitation of sea power, 182
„ Relation of the naval and military services, 176
„ The naval defence of the empire, 186
„ The question of invasion, 177, 181
Prinz Adalbert, 52, 229, plate 36
Prinz Friedrich Karl, 227, plate 36
Prinzess Wilhelm, 54, 232
Prinz Heinrich, 52, 229, plate 37
Prometheus, 54, 205
Proserpine, 54, 205
Protet, 54, 225
Psara, 234, plate 38
Psilander, 258
Psyche, 54, 205
Pueyrredon, 208, plate 12
Puglia, 54, 239
Puritan, 51, 262
Pyramus, 54, 205

Q

Q (German battleship), now Schleswig-Holstein, 24, 50, 229, plate 33
Queen, 50, 197, plate 3
Quinze de Novembro, 213

R

Rainbow, 55, 207
Raleigh, 54, 265
Ramillies, 198, plate 6
Regina Elena, 26, 50, 236, plate 39
Regina Margherita, 50, 236, plate 39
Reina Regente, 256
Reinier Claeszen, 244
Relative Strength of Navies, 39
Renown, 50, 197, plate 5
Re-organization of British Navy, 142–153
  „ Administration, 143, 144
  „ Defects and repairs of warships, 151, 152
  „ Dockyard reorganization, 150-153
  „ Education of officers, 144–147
  „ Internal organization of the Fleet, 148, 149
  „ Shipbuilding policy, 152, 153
  „ The Home Fleet, 149
  „ Training of men, 147
  „ Training of Naval Reserves, 148
République, 21, 50, 221, plate 22
Repulse, 198, plate 6
Requin, 51, 221, plate 27
Resolution, 198, plate 6
Retribution, 55, 207
Re Umberto, 51, 236, plate 40
Revenge, 198, plate 6
Review on the *Naval Annual* of 1903, by Rt. Hon. G. Shaw-Lefevre, 410–413
Rhode Island, 50, 262, plate 65
Riachuelo, 212
Rio de la Plata, 256
Rodney, 51, 198
Roma, 26, 50, 236, plate 39
Roon, 24, 52, 229, plate 36
Rossia, 31, 52, 251, plate 58
Rostislav, 51, 251, plate 56
Roumania, Naval programme, 268
  „ New torpedo Vidette boats, 38
  „ Ships belonging to, 268
Roxburgh, 52, 198, plate 8
Royal Arthur, 53, 205
Royal Oak, 198, plate 6
Royal Sovereign, 50, 198, plate 6
Ruggeiro di Lauria, 51, 236, plate 41
Rurik, 30, 52, 251, plate 57
Russell, 50, 198, plate 3
Russia, Battleships built and building, 47
  „ Effective fighting ships, built and building, 56
  „ Naval Estimates, 30, 384
  „ Naval programme, 30
  „ New destroyers and submarines, 31
Russia, Torpedo craft, 280, 281
Rynda, 253.

S

Sachsen, 229
Sachsen (Ersatz), 50, 229
Saetta, 239
Sagami, 29, 50, 241, plate 45
St. Barbe, 225
St. Georg, 210, plate 15
St. George, 53, 205
St. Louis (French), 50, 221, plate 23
St. Louis (United States), 52, 262, plate 70
Salem, 54, 265
San Francisco, 54, 265
San Georgio, 26, 52, 236, plate 42
San Marco, 26, 52, 236, plate 42
San Martin, 208, plate 12
Sans-Pareil, 199
San-Domingo, Ships belonging to, 268
São Gabriel, 249
São Rafael, 249
Sapphire, 54, 205, plate 10
Sappho, 54, 205
Saracen, 10, 271
Sarawak, Ships belonging to, 268
Sardegna, 51, 236, plate 40
Satellit, 211
Satsuma, 28, 50, 241
Scharnhorst, 24, 52, 229, plate 35
Schlesien, 24, 50, 229, plate 33
Schleswig-Holstein, 24, 50, 229, plate 33
Schwaben, 50, 229, plate 34
Schwalbe, 232
Scylla, 54, 205
Sedul Bahr, 259
See-Adler, 232
Sempione, 209
Sentinel, 205
Sfaktirea, 234
Shahani-deria, 259
Shannon, 8, 52, 198, plate 6
Shikinami, 50, 243
Shikishima, 241, plate 46
Siam, Ships belonging to, 268
Sicilia, 51, 236, plate 40
Siegfried, 51, 229
Sinope, 51, 251
Sirius, 54, 206
Sivoutch, 253
Skipjack, 206
Skirmisher, 206
Skjold, 216
Slava, 50, 251, plate 54
South Carolina, 32, 50, 262, plate 64
South Dakota, 52, 262, plate 69
Sōya, 29, 53, 243, plate 50

Spain, Naval programme, 38
Spartan, 55, 207
Spartiate, 52, 206, plate 10
Speedwell, 206
Speedy, 206
Sperber, 232
Spetsai, 234, plate 38
Stettin, 24, 54, 232
Strategical features of the North Sea, 112–126
Stromboli, 54, 239
Stuttgart, 24, 54, 232
Styx, 221
Suffolk, 52, 198, plate 8
Suffren, 50, 221, plate 22
Suma, 54, 243
Sumatra, 246
Suō, 29, 50, 241, plate 45
Superb, 50, 199
Surcouf, 54, 225
Sutlej, 52, 198, plate 9
Sutsuya, 29, 54, 243
Svea, 257
Sweden, Naval programme, 38
„ Ships belonging to, 257
Swift, 10, 206
Swiftsure, 50, 199, plate 2
Szigètvár, 211

T.

Tacoma, 265
Tactical qualities of the Dreadnought type of battleship, 391–409
Takachiho, 54, 243
Takao, 243
Talbot, 53, 206
Tamoyo, 213
Tango, 29, 50, 241, plate 47
Tapperheten, 257, plate 61
Tartar, 11, 271
Tatsuta, 243
Tchesmé, 51, 251
Tchu-Tai, 37, 215
Tejo, 249
Téméraire, 50, 199
Temerario, 256
Tennessee, 52, 262, plate 70
Terpsichore, 54, 206
Terrible (British), 52, 206, plate 11
Terrible (French), 51, 221, plate 27
Terror, 262
Texas, 32, 262, plate 69
Thesus, 53, 206
Thetis (British), 54, 207
Thetis (German), 54, 232
Thor, 257
Thule, 257
Thunderer, 51, 199
Tiger, 232
Timbira, 213
Tokiwa, 52, 241, plate 49
Tone, 29, 54, 243
Topaze, 54, 207, plate 10
Tordenskjold (Denmark), 216
„ (Norway), 247
Torpedo, Trials of a new, 12.
Torpedo-boat flotilla, Argentine, List of, 272
„ Austria-Hungary List of, 272
„ Brazil, List of, 272
„ British, List of, 269–271
„ Chili, List of, 273
„ China, List of, 273
„ Costa Rica, List of, 273
„ Denmark, List of, 273
„ France, List of 274–276
„ Germany, List of 276
„ Greece, List of, 277
„ Italy, List of, 277
„ Japan, List of, 278
„ Mexico, List of, 278
„ Netherlands, List of, 279
„ Norway, List of, 279
„ Portugal, List of, 279
„ Roumania, List of, 280
„ Russia, List of, 280, 281
„ Spain, List of, 281
„ Sweden, List of, 282
„ Turkey, List of, 282
„ United States, List of, 283
Trabant, 211
Trafalgar, 51, 199
Tréhouart, 51, 221, plate 25
Tria Sviatitelia, 50, 251, plate 56
Tribune, 55, 207
Tripoli, 239
Triumph, 50, 199, plate 2
Troude, 54, 225
Tsugaru, 29, 53, 243
Tsukuba, 29, 52, 241
Tsukushi, 243

Tsushima, 54, 243, plate 50
Tupy, 213
Turbines and oil fuel, advantage of in torpedo craft, 11
Turkey, new torpedo craft, 38
25 de Mayo, 209

U.

Uji, 243
Umbria, 54, 239
Undine, 54, 232
Unnamed ships, Italian battleship, 236
  ,, Swedish armoured cruiser, 257
  ,, Turkish torpedo cruiser, 259
  ,, United States battleships, 262
United States, Administration of Navy, 35
  ,, Battleships built and building, 47
  ,, Effective fighting ships, built and building, 47
  ,, Naval Estimates, 37, 385
  ,, Naval Gunnery, results of target practice of 1906, 36
  ,, Naval Reserves, 36
  ,, New battleships and armoured cruisers, 32–35
  ,, President Roosevelt on battleships, 387–390.
  ,, Proposed increase of Navy, 35
  ,, Rapid expansion of Navy, 39
  ,, Re-organization of fleets, 44, 45
  ,, Torpedo craft, 282
Urania, 239
Uruguay, Ships belonging to, 268
Utrecht, 246

V.

Valkyrien (Denmark), 216
Valkyrien (Norway), 247
Valmy, 51, 221, plate 25
Varese, 52, 236, plate 42
Vasco da Gama, 248
Vautour, 225
Venerable, 50, 199, plate 3
Venezuela, Ships belonging to, 268
Vengeance, 50, 199, plate 4
Venus, 53, 207
Vergniaud, 20, 50, 221, plate 21
Verité, 21, 50, 221, plate 21
Vermont, 31, 50, 262, plate 65
Vesuvio, 54, 239
Vettor Pisani, 53, 236, plate 43
Vicksburg, 265
Victor Hugo, 21, 52, 221, plate 29
Victoria Luise, 53, 232
Victorious, 50, 199
Viking, 247
Vincente Yañez Pinzon, 256
Vindictive, 53, 207
Vineta, 53, 232
Virginia, 50, 262, plate 65
Vitiaz, 258
Vittorio Emanuele III., 26, 50, 236, plate 39
Voevoda, 258
Voltaire, 20, 50, 221, plate 21
Volturno, 239
Vulcan, 207

W.

Waldeck Rousseau, 22, 52, 221
Warrior, 8, 52, 199, plate 7
Wasa, 257, plate 61
Washington, 52, 262, plate 70
Wattigniess, 225
Weissenburg, 50, 229, plate 35
West Virginia, 52, 262, plate 69
Wettin, 50, 229, plate 34
Wheeling, 265
Wien, 210, plate 15
Wilmington, 265
Wisconsin, 50, 262, plate 67
Wittelsbach, 50, 229, plate 34
Wörth, 50, 229, plate 35
Württenberg, 229
Württenberg (Ersatz), 23, 229
Wyoming, 51, 262, plate 66

X.

X (Japanese cruiser), 54, 243

Y.

Yakumo, 52, 241, plate 48
Yamato, 243
Yayeyama, 243
Yodogava, 29, 243
Yorck, 52, 229, plate 36
Yorktown, 265

Z.

Zähringen, 50, 229, plate 34
Zeeland, 246
Zélée, 225
Zenta, 211
Zuhaf, 259

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
DUKE STREET, STAMFORD STREET, S.E., AND GREAT WINDMILL STREET, W.

40

PRINCETON UNIVERSITY LIBRARY PAIR>
32101 041736040